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SOME MODERN EXTENSIONS OF BEAUMONT'S STUDIES ON ALEXIS ST. MARTIN*

III. DIGESTIVE DISTURBANCES PRODUCED BY PAIN AND EMOTIONAL EXCITEMENT

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In the last lecture I tried to make clear the manner in which the digestive process might become inefficient, because in general bodily atony and debility the cranial division of the autonomic system is involved and fails, therefore, to perform its function of establishing tone in the musculature of the alimentary tract. And I mentioned also a probable corresponding inefficiency in calling forth the digestive secretions. In this lecture I wish to point out another way in which the digestive process may be profoundly disturbed through the positive action of the sympathetic division of the autonomic system, a division which, as we have already seen, is commonly opposed in action to the cranial division and which has, therefore, an inhibitory effect on muscular tone and on the secretions of the digestive glands. I would remind you that the sympathetic division is brought into action by a variety of conditions,

prominent among which are pain and great emotional excitement.

The fact that emotional states can upset digestion has long been recognized. Beaumont reported the influence of violent anger upon gastric digestion as observed in Alexis St. Martin. Violent passion, he declared,

*Beaumont lectures delivered before the Wayne County Medical Society, January 31, 1933.

is likely to cause a reflux of bile into the stomach, a change in properties of the chyme, and a retardation or other disturbance of the chyme in its passage onward into the intestine. Similar observations have been made by more recent investigators who have had occasion to study gastric digestion in children whose esophagus has been closed because of inflammation and who, therefore, have had to be fed through a gastric fistula. For example, Hornborg found that when the boy whom he studied chewed agreeable food, there followed a typical psychic secretion of gastric juice. If the boy, however, became vexed and began to cry, the chewing of food was not accompanied by gastric secretion. This observation was confirmed by Bogen, who reported that when the child whom he examined fell into a passion, the giving of food after the child was calmed was for some time not followed by any flow of the juice. These observations on the effects of emotional excitement on gastric secretion are paralleled by corresponding observations on the movements of the stomach. Dr. Joslin has told me of a case that came to his attention. A refined and sensitive woman, who had had digestive difficulties, came with her husband to Boston to be examined. The next morning the woman appeared at the consultant's office an hour after having eaten a test meal. Examination of the gastric contents revealed the presence of a considerable amount of the supper of the previous evening. The explanation of this stagnation of the food in the stomach came from the family doctor, who reported that the husband had made the visit to the city an occasion for becoming uncontrollably intoxicated, and that by his escapades he had given his wife a night of turbulent anxiety. The second morning, after the woman had had a good rest, the gastric contents were again examined and the test breakfast was found to have been normally discharged. Hertz has reported the case of a man of most regular habits who was in a bad railway accident in which he was buried by the wreck of the cars for more than half an hour. He was so deeply affected by the experience that for days his bowels refused to act, although he used all sorts of agents to make them do so. Dr. Alvarez has cited the instance of a young woman, with digestive processes profoundly disordered, whose condition was brought back to normal only after he had

paid the tax collector whom the patient, because of her negligence, had occasion to fear. These instances are common enough in the experience of any gastro-enterologist, and probably also in the experience of most general practitioners of medicine. Indeed, the statement has been made that fully 80 per cent of persons who consult physicians because of digestive disorders do so because of some disturbing emotional factor.

Not only emotion but also pain can affect the digestive process. Netschaeiev, working in Pavlov's laboratory, showed many years ago that excitation of the sensory fibers in the sciatic nerve for two or three minutes resulted in a checking of the secretion of gastric juice that lasted for several hours. Similarly, in the motor aspects of digestive function, there may be a marked inhibitory effect produced by strong afferent stimulation. One of the most distressing instances of inactivity of the bowel is that seen occasionally after surgical operations on the abdomen. In 1906 Dr. F. T. Murphy and I undertook an analysis of the factors which are concerned in this post-operative inactivity. We found that it might be caused by handling the stomach and intestines; that is, it might be caused by local effects in the wall of the digestive tract, or that it might be produced reflexly. Thus trauma during the standard half hour of etherization (which in itself, I may say, had relatively little influence on the discharge of food from the stomach and its passage through the intestines) actually retarded the exit from the stomach for four or five hours and thereafter caused the discharge to be characteristically slow. The movement through the small intestine was likewise very sluggish. In only one case out of ten did the food reach the colon within six hours, whereas normally it would begin to appear there in about three hours. Of course the trauma in these experiments was performed under anesthesia, when nervous conduction involving reflex pathways is much depressed. No doubt painful experience in the absence of anesthesia would have effects which would be even more pronounced. Indeed, the expression "sickening pain" is testimony to the power of strong sensory stimulation to upset the digestive processes profoundly. Vomiting is as likely to follow violent pain as it is to follow strong emotion.

In the experiments performed by Murphy and myself we found that after severance of

the splanchnic fibers of the sympathetic system the standard trauma resulted in no effect whatever. Indeed, the results observed in such cases compared favorably with those from animals in quite natural conditions. After splanchnic section, likewise, the effects of emotional excitement are no longer noteworthy. There may be some inhibitory action produced by way of the vagus nerves, but vagal impulses are not nearly so efficient in stopping gastric peristalsis or the segmenting movements of the small intestine as are the impulses delivered from sympathetic sources.

Many years ago, when I first noticed that emotional excitement caused inhibition of the movements of the stomach and intestines and learned also that it depressed for a considerable period the action of the digestive glands, it seemed to me that the rational procedure would be to interrupt the sympathetic channels through which these inhibitory effects are produced, in order that so beneficent and so fundamentally important a process as that of digestion should not be interfered with. At that time I did not thoroughly comprehend the organization of the sympathetic system for diffuse distribution of its influence and did not realize how widespread were the effects of its activities. Only gradually, as new evidence came in, did I learn that in addition to the well-known acceleration of the heart and rise of blood pressure that result from emotional disturbance there is a complex of other changes, including redistribution of blood in the body, a discharge of extra corpuscles from the spleen, a more rapid coagulation of the blood, an increase of blood sugar, and a dilation of the bronchioles. If we consider this complex of changes associated with pain and great emotional stress, we perceive that the inhibition of the digestive process is but a single item in the total variegated picture. Only by understanding the significance of the total change can we interpret the disturbance of digestion. I propose, therefore, that we consider now the ways in which the sympathetic system can affect the body.

The best mode of obtaining an insight into the functions of the sympathetic system is by learning the conditions which bring it into action. Prominent among such conditions are external cold, hypoglycemia, motion and emotion.

We are all familiar with one effect of ex-

ternal cold, as seen in domestic mammals and birds. The roughened hair of the horse or the cat and the ruffled feathers of the fowl on a cold morning are indicative of sympathetic action, because the smooth muscle which erects the hairs and feathers is under sympathetic control. Human beings, as highly evolved mammals, have degenerate skin appendages and therefore "goose flesh" is the only obvious manifestation of this effect of cold. If you examine closely the little hummocks of goose flesh you will find standing upright in each one a minute hair. The question arose as to whether this activity of the sympathetic system in response to external cold was associated with discharge of the adrenin from the adrenal medulla. If so, it would be a matter of some importance because adrenin is capable of accelerating the processes of combustion in the body, much as putting a blower on the fire accelerates the burning of the coal. Thus extra heat would be produced in the organism at a time when it would be especially useful. In order to test this possibility we made use of the denervated heart, *i.e.*, severing all connections of the heart with the central nervous system, but leaving the recurrent laryngeal branch of the right vagus to innervate the larynx and the left vagal trunk to care for digestion. The operation, which was of course done with surgical precautions, involved also removal of the upper thoracic sympathetic chains. Animals thus operated upon lived indefinitely in the laboratory in good physical condition. The denervated heart is extraordinarily sensitive to increase of adrenin in the circulation. It beats faster when there is an increase of adrenin by one part in 1,400,000,000 parts of blood. The beat of the heart can be registered simply by holding a receiving tambour against the chest wall and letting the cardiac impulse, as transmitted through a tube to a recording tambour, write its tracing on a smoked surface.

If an animal thus prepared, and quite recovered from the operation, is placed comfortably on a cushion near a window during cold weather the raising of the window results, within a few moments, in a typical erection of the hairs in response to the cold. Associated with this evidence of sympathetic activity there is an increase in the rate of the denervated heart. The increase may amount to 30 or more beats per minute. If the adrenal glands are now inactivated, *i.e.*,

if one is removed and the nerves to the other are severed, so that adrenal secretion can no longer be excited, exposure of the animal to cold in the same manner as before results in no noteworthy increase in the heart rate. Indeed, the rate may actually fall. It is clear, therefore, that the sympathico-adrenal system is stimulated to activity in cool surroundings when the temperature of the body is likely to fall. The erection of hairs serves to enmesh about the body a layer of air which is a poor conductor of heat. Associated with this is a constriction of the surface blood vessels so that the warm blood from the interior of the body is less exposed to the surface, where it would lose heat. By these two procedures heat loss is minimized. The extra discharge of adrenin accelerates the burning process, and thus the temperature of the body is further prevented from falling. If the adrenal glands are inactivated and animals are then subjected to a standard degree of cold, the organism falls back upon shivering as another means of providing the needed extra heat. It is obvious from these considerations that a primary function of the sympathetic is the protection of the body against a lowering of body temperature.

You are all familiar with the fact that if insulin is given in excess there is produced a characteristic state known as the "hypoglycemic reaction," attended by sweating, a faster pulse, and dilation of the pupils. These phenomena are all indicative of activity of the sympathetic system. Again the question arose as to whether the adrenal glands were involved. If so, it was a matter of some importance to determine the fact, because adrenin is effective in liberating sugar from storage from the liver. Thus a condition of hypoglycemia would be rectified by physiological action in a natural manner through discharge of sugar from the hepatic reservoir. Again, it was possible to make use of the denervated heart.

If insulin was given when the adrenal glands were out of action the blood sugar fell continuously, with no increase in the rate of the denervated heart, even though the glycemic percentage was reduced to the convulsive level. It is noteworthy that the drop in the blood-sugar concentration was almost in a straight line, *i.e.*, at almost a uniform rate. When, however, insulin was given with the adrenal glands in place and ready to act, the blood sugar fell only to a

certain point—a critical point—whereupon the denervated heart began to beat more rapidly and continued to accelerate as the fall continued further. The acceleration of the denervated heart was, of course, due to discharged adrenin, because it failed to occur when only one factor was lacking, *i.e.*, the adrenal glands. As soon as this indication of adrenal discharge appeared it was interesting to observe a check in the fall of blood sugar. This pointed clearly to a liberation of extra sugar from reserves in the liver, for adrenin is known to have that effect. It seemed clear, therefore, that a protective arrangement was at work shielding the organism from the dangers of excessive hypoglycemia.

Good evidence that this protective service was being performed by the sympathico-adrenal system was obtained by selecting a dose of insulin which, in normal animals, barely failed to cause a reduction of blood sugar to the convulsive level. The action of this barely subconvulsive dose was then studied in animals which were deprived of the service of the sympathico-adrenal apparatus by extirpation of one adrenal gland and denervation of the other. The typical effect of this standard dose under these circumstances was to produce convulsive attacks within a relatively short period of time. Further confirmation of this evidence was reported by Macleod and collaborators, who noted that if rabbits had been well fed, so that the liver stores were satisfactorily stocked, a given dose of insulin would cause a fall of blood sugar to a relatively low level, whereupon the glycemic percentage would begin to rise and would be restored to normal. Here is an example of the efficient corrective action of the sympathico-adrenal system. It is obvious that that system acts to protect the body from a disastrously low percentage of blood sugar when conditions are such as to tend to lower it.

I mentioned earlier that both motion and emotion will bring the sympathico-adrenal system into play. The evidence that strong emotion will have that effect is known to everybody. The cat frightened by the dog has hairs standing erect all along its body, from the top of the head to the tip of the tail. The pupils are dilated, the pulse is rapid, and there are internal changes, such as increase of blood sugar and increase of red blood corpuscles (from contraction of the spleen), all of which indicate that the

excitement has caused a discharge of sympathetic impulses. The question again arose as to whether there is a discharge from the adrenal medulla under these circumstances. For many years this question was in controversy. Stewart and Rogoff of Cleveland declared that the discharge of adrenin was steady and uniform, and they refused to accept the evidence that had been adduced to show that adrenal secretion is increased in the blood as a consequence of emotional stress. The denervated heart allowed definite evidence to be obtained on that point, for the animal with heart denervated could be observed any number of times under circumstances experimentally produced before inactivating the adrenals, and could be observed any number of times thereafter under the same circumstances, and the difference in the response of the heart clearly and permanently registered.

When the experiment just described was performed, it was found that not only did strong excitement cause an acceleration of the denervated heart but even minor activity, such as rising from a cushion and walking across the floor, would have that effect. To be sure, slight exercise had only little influence. In one experiment, for example, walking caused an increase of the heart rate by approximately 20 beats a minute. Later, when the animal (a cat) was resting on a cushion and a dog was brought near, and the hairs were erected and the cat hissed in a simple emotional response, there was a larger increase—approximately 40 beats a minute. When now the animal was placed in a cage and the dog was allowed to bark and make aggressive movements so that the cat responded vigorously, the heart rate, as soon as the animal could be removed from the cage and its cardiac impulse registered, manifested an increase of over 70 beats a minute. When this same animal was put through the same series of conditions after inactivation of the adrenal glands, minor exercise caused no increase in the heart rate, simple emotional excitement caused an increase of only 2 beats a minute, and excitement with struggle an increase of approximately 8 beats instead of 72. This increase of 8 beats belongs to another story, for it was the occasion of the discovery of a substance given off from smooth muscle when stimulated through sympathetic channels—a substance which we have given the name "sympathin." From these observa-

tions it is clear that both motion and emotion are accompanied by a discharge of adrenin from the adrenal glands and that therefore in these circumstances the sympathico-adrenal system is at work.

That the sympathico-adrenal system is excited to action in profound emotional disturbances, such as fear and rage, and that associated therewith the heart beat is accelerated, the blood pressure is raised, the circulating red blood corpuscles are increased in number, and the blood in the body is redistributed so that it is sent away from the splanchnic area and driven in greater volume through the brain and the muscles; and furthermore, that there is a discharge of sugar from the liver, a hastening of the process of coagulation of the blood, a dilation of the bronchioles, and a pouring-out of sweat—that all these phenomena occur as a consequence of excitement led to the suggestion of the emergency theory of sympathico-adrenal activity. That theory was based on the view that the powerful emotions, fear and rage, are linked with instinctive behavior which may involve supreme muscular effort. Thus the emotion of rage is associated with the instinct to attack, and the emotion of fear is associated with the instinct to run or escape. When under natural conditions enemies confront each other, these two emotions may be supremely aroused and the instincts may develop into a supreme struggle for existence. In this balance between triumph and disaster lies the key for explanation of the bodily changes which accompany great excitement. All the vascular adjustments—the rapid heart, the increased blood pressure (with larger volume of flow through brain and muscles), the increased number of red corpuscles—are useful in supplying a larger delivery of oxygen where supreme activity is likely to be going on, *i.e.*, in the neuromuscular apparatus. The dilation of the bronchioles adjusts the respiratory system to the greater need of an adequate oxygen supply and a larger riddance of carbon dioxide. The sugar freed from storage in the liver gives to the laboring muscles the source of energy which they need for continued action. If in struggle there is damage to blood vessels, faster clotting of the blood helps to check the loss from the body of this most precious fluid.

The foregoing considerations again point to the sympathico-adrenal system as a pro-

tective agency in times of crisis. Associated with the redistribution of blood in the body, a redistribution which involves sending the blood away from the splanchnic area to the active muscles and their nervous governors, there is necessarily a relative anemia of the gastro-intestinal tract. It is under these circumstances that the gastro-intestinal functions are inhibited. We see, therefore, that the disturbances of digestion, which we have been considering, are part of a larger complex of reactions in the organism, which, in the development of higher animal forms, have played an important rôle in the conflicts which have determined survival. At a critical juncture it is appropriate that the digestive process, beneficent though it may be, be set aside temporarily in order that the organism as a whole, by functional readjustments, may have a more favorable chance in meeting the decisive demands of the moment. As I view the conditions which prevail in civilized society, I regard the emotional disturbance of digestion as being induced after the traditional dangers in the long history of our race have largely disappeared. It is rare, indeed, that we are emotionally excited by circumstances which demand supreme muscular effort. We become excited, for example, by watching a game, or by facing an examination, or by learning bads news, *i.e.*, when no struggle is called for. The digestive processes, however, may be quite as much upset by these incidents as if the utmost physical exertion was anticipated. Only by understanding these larger aspects of the response to excitement can we explain to patients what an emotional derangement of digestion means, and how foolish it is to allow the organism to get into fighting trim, with possibly disastrous stoppage of the digestive process, when no fighting is required.

The views which I have just developed have received a more extensive application through recent studies, which have been made on animals from which the sympathetic system has been wholly removed. You will recall that the outlying neurones of this system are arranged in two chains, reaching from the superior cervical ganglion to the pelvis on either side of the spinal column. Long ago Langley and Anderson showed that if the outlying neurones are removed the preganglionic fibers, reaching out from the spinal cord, can not make effective junction with the smooth muscle and glands that

are normally innervated by the postganglionic fibers. Removal of the sympathetic chains, therefore, definitely eliminates the sympathetic control of the glandular organs and those managed by smooth muscle.

In our first operations we removed the sympathetic chains in parts,—the cervical, the abdominal and the thoracic. The fault of this method lay in the possibility of overlooking some ganglia in the lower thoracic region behind the attachment of the diaphragm. In our later operations we removed each of the chains intact, an unbroken string of ganglia, from the stellate at the top of the thorax to fused masses in the pelvis. Removal of the stellate ganglion renders unnecessary the extirpation of the cervical ganglia, because the preganglionic fibers of these ganglia pass through the stellate and are therefore interrupted when that ganglion is removed.

The first and most striking fact that appears in an experience with these sympathectomized animals—which, as you recognize, are really new types of organisms in the world—is that they live in the conditions of the laboratory quite normal lives without any serious difficulty. Two such animals were kept in the laboratory for more than three years before they were used for post-mortem examination. They digest their food normally, they gain in weight, they grow to adulthood in a natural manner if the sympathetic is removed when the animal is young, and they have an essentially normal metabolism. Females take their part in the process of reproduction. Males, however, are sterile, because seminal ejaculation is stopped.

The question has been raised as to possible innervation of skeletal muscle by the sympathetic system. Some years ago Hunter and Royle made the assumption that the spastic contraction of skeletal muscle, occurring after cerebral injury, was due to an excessive discharge of sympathetic impulses delivered to the muscle. This view they supported by experiments in which, so they stated, the rigidity of the limbs after removal of the cerebral cortex was present on the normal side but absent on the sympathectomized side. For orthopedic purposes, therefore, they advocated the operation of cutting the rami which carried the sympathetic fibers distributed to the spastic limbs. According to their accounts, there resulted a lessening of the spasticity and a remark-

able improvement in the control of the limbs. Later work by many observers has failed to support the experimental observations of Hunter and Royle. Work done at the Harvard Laboratory by Forbes and others revealed no influence of the sympathetic system on the rigidity that follows decerebration. There was, to be sure, a variation of the rigidity on the two sides of the body dependent upon the position of the head. It seems possible that Hunter and Royle, in their original observations, failed to take this matter into consideration. It is significant that after total removal of the sympathetic system no variation in muscular tone is observable. When one of our animals, from which one abdominal sympathetic chain had been removed for some time, was presented to Dr. Royle for test of its knee jerks, he was unable to distinguish any difference on the two sides which would permit him to judge which side was sympathectomized. The bulk of evidence is opposed to the idea that there is a sympathetic control of tone in skeletal muscle.

If life, growth, metabolism and muscular action are unaffected by sympathectomy, what importance has the sympathico-adrenal system? We can understand better the functions of that system if we spend a few moments considering our two environments. As Claude Bernard pointed out many years ago, we not only have the external environment with which all of us are acquainted—the environment consisting of the agencies in the outer world which affect our sense organs and which we use for our purposes—but also a less well-known internal environment composed of the fluids of the body. All of our living parts, all of the varieties of cells which compose our active organs, are bathed in these fluids—the blood and the lymph. These fluids are the product of the organism itself and are under the control of the organism. It is in the highest degree important that they be kept relatively constant. You are familiar with the fact that if the percentage of blood sugar rises from 100 to above 170 mg. per cent, it escapes from the body through the kidneys. On the other hand, if it falls as low as 45 mg. per cent, convulsions are likely to occur; and a further fall may be associated with coma and death. Again, if the calcium content of the blood, which is normally 10 mg. per cent,

rises to 20 mg., the blood becomes so viscous that it will hardly circulate, whereas if it falls from 10 to about 5 mg. per cent convulsions supervene. Similar need for constancy is seen in the relation of acid and base in the blood. If the pH, which is normally about 7.4, falls to 6.95—a very slight change—coma appears; and if it rises from 7.4 to 7.7 there are convulsive attacks. Analogous limits of temperature variation are imposed on warm-blooded animals. The body temperature cannot remain long at 108° or 109° F. without causing irreversible changes in delicate nerve structures of the brain; and although the temperature may fall from approximately 98° to 75° F. without causing death, that low temperature is incompatible with bodily activity. These extreme variations which I have mentioned are ordinarily not permitted. When shifts occur in either direction above or below the normal they are, of course, to some degree shifts in the direction of excess, but long before the excess is reached devices are set at work which prevent the extreme stage from being reached. I have already illustrated the protective arrangements provided in the sympathico-adrenal system, when there is constriction of surface vessels and discharge of adrenin if the temperature tends to fall, when there is liberation of sugar from the liver if the blood-sugar level is reduced beyond a critical point, and when the circulation is accelerated so that extra oxygen is delivered and excess of carbon dioxide is carried off if muscular exertion is vigorous. It is clear that the sympathico-adrenal system offers an automatic stabilizing device for maintaining uniformity of the internal environment. And just insofar as this internal environment, or fluid matrix, in which our living parts reside is kept uniform, we are freed from the limiting effects of both external and internal changes.

Further evidence of the importance of the sympathico-adrenal system in maintaining constancy of the internal environment is found in the characteristic behavior of sympathectomized animals when they are subjected to conditions of stress. When such animals are exposed to cold the hairs are not erected. Also the peripheral blood vessels are not constricted, and therefore the body heat is poorly conserved. The secretion of adrenin, which, as we have learned, is use-

ful in accelerating the metabolic rate so that there is increased production of heat, does not occur. For these reasons you would expect that exposure of these animals to cold would reveal their deficiencies. As a matter of fact, it does so. When such animals are placed in a cold room the body temperature promptly begins to fall. Exposure of normal animals to the same low temperature has no such effect. The body temperature of sympathectomized animals drops perhaps 2 or 3° C., and then by shivering they are usually capable of preventing a further drop to a lower level. This deficiency in temperature regulation does not ordinarily manifest itself because the animals live in the warm rooms of the laboratory during the winter months and are therefore not subjected to exacting conditions. It is noteworthy, however, that when they can do so they resort to radiators and other sources of warmth much more frequently than do normal animals.

Not only are the sympathectomized animals sensitive to cold; they are also sensitive to heat. In order to prove whether an animal that takes the upright position could withstand removal of the sympathetic system, the operation was performed on a monkey. When on a warm June morning this animal was placed with some other monkeys in the yard in order that they might enjoy fresh air and sunlight, it was soon found that the animal that had been operated upon was in collapse, with a high temperature. Indeed, the animal died of heat stroke. We depend on the sympathetic system not only to protect us against heat loss but also against high temperature.

When sympathectomized animals are emotionally excited there is no rise of blood sugar, instead of the usual rise of over 30 per cent. The blood pressure instead of being elevated is actually depressed by excitement and struggle, and the emotional polycythemia which occurs in consequence of contraction of the spleen is wholly lacking. It is clear that these changes, which, as we have learned, may be regarded as preparations for action, would not occur when action itself took place. There would be no redistribution of blood in the body, a fall of blood pressure instead of a rise, only a slightly increased heart rate (resulting from diminished vagal tone), and no blood sugar for continued activity. Under such circumstances we should expect a very consider-

able reduction in the capacity of the animal to work. Actual observations on a dog trained to run in a tread mill until exhausted proved that sympathectomy greatly reduced the capacity of the animal to perform.

The facts which we have just reviewed bring out emphatically the functioning of the sympathetic division in maintaining constancy of the internal environment. If this internal environment were not kept constant in cold weather, for example, we, like lower animals such as the frog, or like mammals which have not adequate control of their body temperature, should have to become inactive in hibernation. We are rendered independent of such external changes of temperature by the functioning of the sympathetic division as a protector of the constancy of the fluid matrix. This division likewise renders us independent of possible disturbances which might be caused by our own actions. In muscular struggle, for example, sugar is used up, and were it not for the service of the sympathetic in liberating extra sugar from storage we should soon suffer from hypoglycemia in consequence of muscular effort. Furthermore, when we engage in vigorous physical struggle heat is produced in excess. Indeed, so much heat results from maximal muscular contraction that at the end of three miles of a boat race the oarsmen, if they could not be rid of the heat, would be stiff in coagulation—you will please pardon the incongruity! Of course, this condition is not even approached, because, through operation of the sympathetic system, the surface blood vessels dilate, and sweat is poured out, and thus the extra heat is dissipated. Again, vigorous physical struggle develops a large quantity of lactic acid. The amount thus produced would easily overwhelm the alkaline buffer in the blood if that were the only protection against the development of an acid reaction. The dangers which might result from the shift to an acid reaction are obviated, as we have seen, by acceleration of the heart, contraction of the splanchnic blood vessels and discharge of stored corpuscles from the spleen, all of which changes are managed by the sympathetic system, and all of which are directed towards delivery of additional oxygen to the active organs, the burning there of the non-volatile lactic acid to volatile carbon dioxide and water, and the carriage of the carbon dioxide to the lungs for discharge from the body.

Associated with violent effort and simultaneous coöperation of the sympathico-adrenal system there is, as we now can readily understand, a disturbance of the digestive organs. As Beaumont noted, "severe and fatiguing exercise retards digestion." He offers two reasons for this effect: "the debility which follows hard labor of which the stomach partakes; and the depressed temperature of the system, consequent upon perspiration, and evaporation from the surface." In the light of our present understanding we should attribute the "debility which follows hard labor" to a lack of tone in the digestive organs because of the participation of vagus functions in the general bodily exhaustion. Although we should not lay so much stress on the "depressed temperature of the system" because of perspiration and the evaporation of sweat from the skin, we should today recognize that it is the diffuse influence of the sympathetic system, causing not only the outpouring of sweat but also the inhibition of gastric and intestinal activities, that would account for digestive derangement in severe exercise.

We are now in a position to understand fully why removal of sympathetic influences, in order to avoid a disturbance of digestion, would be an irrational procedure. Since this system has as its primary function the maintaining of constancy of the fluid matrix, any change lessening its influence would equally diminish its effectiveness in carrying on that essential function.

We are also in a position now to understand more fully how persistent emotions may interfere with the beneficent services of the gastro-intestinal tract to the organism. As we have already seen, the changes accompanying emotional excitement are similar to those which occur in times of vigorous effort. They have been interpreted, therefore, as preparations for such effort. If the emotion is transformed into action, then the preparation is useful, and the body by anticipation is protected against a low blood sugar, an excessive heat, and a limiting shift in the direction of acidity of the blood. If no action succeeds the excitement, however, and the emotional stress—even worry or anxiety—persists, then the bodily changes due to the stress are not a preparatory safeguard against disturbance of the fluid matrix but may be in themselves profoundly upsetting to the organism as a whole. Woodyatt has described a man with

diabetes who was being carefully observed under rigorous conditions in a hospital and who had no glycosuria. Suddenly one day, without alteration of his regimen, there was a large discharge of sugar in the urine. Inquiry revealed that he had just learned from the firm which he had served for many years that he had been discharged. The worry and anxiety under these circumstances were the occasion for a marked exacerbation of his pathology. Cabot has cited the case of a man in a hospital with a broken leg. His nutrition was strangely and inexplicably defective and the leg was slow in healing. At last it was learned that he had been worrying about the condition of his family. When he was reassured regarding their state, his digestive and assimilative processes were soon restored to normal and the healing rapidly progressed.

Like other involuntary functions it is possible to condition emotional reactions. You are probably familiar with the experiments of Pavlov, who showed that when two stimuli—one of them a natural stimulus such as acid or food in the mouth for the flow of saliva, and the other an indifferent stimulus such as the ringing of a bell—act simultaneously, there will occur, after the coincidence has been many times repeated, a flow of saliva in consequence of the ringing of the bell, *i.e.*, when the indifferent stimulus alone is acting. There may be a similar relationship developed between significant and indifferent factors in disturbances caused by emotional experience. The circumstances which attended the original occasion for the emotional upset may cause a recurrence of the upset. I well recall in my own experience an incident of digestive distress which was associated with eating food seasoned with mayonnaise dressing. For weeks thereafter the sight or odor of that sort of dressing brought back in a very disagreeable form the original experience, although the dressing as such had nothing to do with the original disturbance. Doubtless many of you will recall similar instances to which you could refer.

What do these considerations of the influence of emotions on digestion suggest in the way of practical advice? It seems to me that inasmuch as we now understand that the total complex of bodily changes associated with emotional excitement are properly interpreted as preparation for struggle, we should attempt to take a rational attitude

towards any exciting incident which may occur. We should decide that if there is action to be engaged in, the excitement should be allowed to run its full course without limitation. If there is nothing to be done in the circumstances, however, it is obviously unwise to permit the organism to be deeply disturbed and especially the fundamentally important functions of digestion to be inhibited. You may object that emotional excitement is not under voluntary control and that therefore we cannot check its course. I can testify from personal experience, however, that since I have come to understand the function of the strong emotions and have realized the widespread and profound perturbations which they may uselessly cause in the body, I have been able to take a rational attitude which has minimized the extent of their influence.

Another suggestion which may be offered is that when an occasion arises which provokes a degree of excitement that cannot be controlled, the reasonable behavior is that of working off in hard physical labor the bodily changes which have occurred in preparation for vigorous effort. Often the excited state can thus be reduced and the body, instead of being upset, is restored to normal.

In concluding this series of lectures I wish to tell you how deeply grateful I am that you gave me the privilege of celebrating with you the centenary of the culmination of Beaumont's studies. I have shared with you an admiration for the spirit in which he carried on his investigations, and I have re-

joiced that I could take part with you in this memorial to his achievement.

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CYSTINE NEPHROLITHIASIS

According to GEORGE H. EWELL, Madison, Wis., cystine nephrolithiasis occurs as a complication of cystinuria, the latter in all probability being due to an error in metabolism with a definite hereditary tendency. Calculus formation is dependent on different factors, such as stasis and infection. Cystine nephrolithiasis should be suspected in all cases of recurrent renal calculi, and the calculi and urine should be examined chemically for cystine. If a cystine calculus is found or cystinuria is demonstrated, the patient should be put on a low protein diet, proteins with a high cystine content being

avoided, and the urine should be rendered alkaline by the internal administration of alkalis. In two of the author's cases, after three months of such management the disappearance of sandy particles of cystine and crystals from the urine was noted, with a decrease in the cystine content of the urine. Crystals promptly returned after the resumption of a general diet and discontinuance of the alkali. The possibility of the formation of phosphatic calculi from the intake of alkali should be borne in mind. In one case no conclusions are warranted. In another case the formation of calculi was not prevented after several months of apparently the same management.—*Journal A. M. A.*

THE IMPORTANCE OF WATER IN THE TREATMENT OF RENAL DISEASE

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Twenty-five years ago, Frederick C. Shattuck, Professor of Medicine at the Harvard Medical School, observed that nephritic patients did very poorly under hospital treatment. He had noted that prior to admission the patients seemed quite comfortable and death had not been imminent. But soon after admission most patients promptly died. One of his frequently repeated questions to his intern at that time, Dr. Newburgh, was, "What is wrong with our treatment which obviously makes the patient worse?"

In those days the standard treatment was to allow a low protein, salt-poor diet and to restrict fluids. In addition, purging was done to favor elimination by the bowels and pilocarpine sweats for elimination by the skin were instituted. If this treatment did not seem adequate, and edema was present, the patient was put in an oven and literally "baked" until sweating was profuse. In a few days anuria developed and uremia threatened. If twitchings and convulsions appeared, fluids were then forced. Occasionally a patient survived, more often expired.

Today, after twenty-five years, we have abandoned the ovens and pilocarpine sweats. But no sooner is the diagnosis of nephritis made than water intake is restricted and purging often begun. Under such treatment the experience is practically the same as it was in Doctor Shattuck's time. Perhaps the patients do not die so promptly now as then, but we are still faced with the same fact that they usually do better before admission to the hospital than after.

There is at least one striking difference between hospital treatment and that before admission. The great majority of patients will give a history of having taken large amounts of water when left to their own desires.

The purpose of this investigation was to determine the effect of both water restriction and of liberal intake on the excretion of waste products by the kidney. Normal individuals and those with various types of renal disease were studied. During both the period of water restriction and liberal water intake, urine was collected for twenty-four hours after a preliminary ten hours fast. During the period of urine collection a very

definite and constant diet was taken, thus assuring a constant intake of solids.

During the water restriction period, the total water available from all sources was only 700 c.c. per twenty-hours. Under these conditions it was found that normal kidneys are able to concentrate the urine to a specific gravity of 1.029 or above, while diseased kidneys cannot. The lower the concentrating ability is, the greater the renal damage. This confirmed previous observations regarding the index of the specific gravity of the urine to kidney function.^{1, 2} By being able to concentrate the urine, it was further found that normal individuals under these conditions of water restriction excrete 450 c.c. of urine per twenty-four hours in which there were about 33 grams of total waste products (Table I).

TABLE I

Concentrating Ability Specific Gravity	No. of Cases	Grams per 24 hours	
		Urine Water	Urine Solids
Normal			
1.029 - 1.032	8	456	32.95
Abnormal Group A		No Nephrotic Edema	
1.025 - 1.029	4	594	34.94
1.020 - 1.025	7	713	41.22
1.015 - 1.020	5	971	39.81
1.010 - 1.015	4	1355	32.69
Abnormal Group B		Nephrotic Edema	
1.0203		247	13.82
1.0096		845	18.89

Under the same conditions of water restriction, individuals with renal disease responded differently. In fact, two distinctly different responses were noted. The critical factor which determined the type of re-

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sponse was the presence or absence of nephrotic edema. In Table I, Group A are those individuals having renal disease but no nephrotic edema. This group included chronic nephritis who had never had edema or from whom it had disappeared, chronic nephritis with hypertension, essential hypertension with mild renal involvement, pyelonephritis, and renal tuberculosis. In Group B, Table I, are those having chronic nephritis with nephrotic edema present.

It will be noticed in Group A that as the renal damage is more severe (as indicated by the specific gravity) there is a greater volume of urine excreted. Along with this greater urine volume there is a normal amount of urinary wastes. It appears that, as the concentrating ability of the kidneys decreases, an increased volume output makes compensation, and a normal excretion of urinary wastes is maintained.

The subjects in Group A received the same water intake as the normal group yet excreted a larger volume of urine. Obviously this extra water must have come from the body tissues. Apparently the process of excretion of waste products in renal disease is fundamentally one which avoids the retention of solids by increasing the water output as a compensation for a low concentrating ability. If the ingested water is too small for this purpose, extra water will be obtained at the expense of body water.

In Group B, those with nephrotic edema present, a different response is noted. In the first place the volume of urine excreted is not as great as would be expected for their respective concentrating abilities. Along with the small urine volume there is a corresponding small excretion of urinary wastes. One might say on first thought that in this particular disease the small water and solid excretion is accounted for by the inability of the kidneys to excrete these substances. But, as will be shown later, these kidneys could excrete both water and urinary wastes in the normal fashion. The only alternative left is that in this particular disease water is so firmly held in the tissues that it is not released. The source of extra urine water as a compensation for a low concentrating ability is shut off, the urine volume is small, and with it there is a retention of waste products.

The next procedure was to keep all conditions the same as during the period of water restriction except to allow water as de-

sired. In Table II it will be noted that when water was allowed there was no striking increase in the solid excretion of the normal group. Cases 30 and 26 are presented as typical of the groups without nephrotic edema and with nephrotic edema respectively. Case 30, without edema, increased both the water and solid excretion with an increased water ingestion. Significantly enough, Case 26 with marked edema likewise increased enormously both the water output and urinary waste elimination. This is striking evidence that nephrotic edema is not primarily due to the inability of the kidneys to excrete water and waste products. Furthermore, the retention of wastes in the presence of nephrotic edema must be attributed solely to inadequate water intake. Even in the presence of edema, a large water intake is indicated as the only hope of avoiding retention of waste products.

TABLE II

Case	Diagnosis	Part A Water Restricted		Part B Water as Desired	
		Gms. per hr.		Gms. per hr.	
		Urine Water	Urine Solids	Urine Water	Urine Solids
	Normal	20.86	1.445	36.55	1.545
30	Chronic Ne-h. with hyperten- sion No edema	75.16	1.375	205.10	1.572
26	Chr. parench. Nephritis Edema marked	8.78	0.505	164.50	1.445

SUMMARY

Individuals with various types of renal disease were subjected to conditions of extreme water restriction (700 c.c. per twenty-four hours). It was found that when the nephrotic type of edema was absent, a large volume of urine was excreted in which there was a normal amount of excretory wastes. The extra water was obtained at the expense of body water. When the nephrotic type of edema was present, there was a small volume of urine and retention of excretory wastes. Presumably, the body water was so firmly fixed in the tissues that it was not released for urine formation.

When water was allowed, both groups responded with a large volume of urine and an increased excretion of waste products.

In renal disease, regardless of the type and whether edema is present or absent, an enormous fluid intake is imperative if retention of wastes is to be avoided.³

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SOME FACTS CONCERNING THE RETINAL VESSELS IN HYPERTENSION*

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The subject matter of this paper is based upon the findings and deductions made in examination for many years of a very large number of hypertension cases, either the so-called essential hypertension or that associated with cardio-renal complications. The latter too often were the primary lesions and the hypertension an initial or secondary accompaniment. All cases were patients in the Cook County Hospital.

The deductions and observations made from this large clinical material do not differ from those made by other ophthalmic clinicians, but it adds to the profound value of a careful scrutiny of the fundus oculi in all patients who have any cardio-renal or vascular lesion.

The ages of the patients ranged from fifteen to eighty years, about equally divided as to sex. Many of the cases were parturient women, before and after labor. A goodly number were patients with frank or suspected brain tumor or abscess. In quite a few an anemia was the primary cause calling for a fundus examination. Yet in this variety of pathology, the principal underlying facts relative to hypertension hold true, and the fundus picture ascribable to hypertension varies scarcely an iota.

In by far the major portion did the fundus findings foretell the probable lesion, and confirmed or aided materially in the differential diagnosis as well as being of a certain prognostic import. Especially was the determination of the retinal vessel tension significant in increased intracranial pressure, with or without choked disc.

Volhard, and recently Kahler and Sallman of Vienna, have definitely shown that arterial hypertension is the underlying basic cause for the retinitis nephritica. The kidney function may be normal, but in a certain percentage of cases, especially in certain types of nephritic cases, there is a circulating toxin, which cannot engender the retinitis in the absence of hypertension (Schieck¹⁵).

Raad¹⁴ recently has proven that the nitrogen retention (ammonia compounds) is perhaps the specific toxin which, in addition to the hypertension, is what causes the retinal edema, disc edema, and the retinitis. We know that ammonia compounds are a potent cell poison and destroyer. And, in these nephritis, the retina is bathed in this retention ammonia compound.

On the other hand, a systemic hypertension may be absent in some nephritis, but there is a local (fundus) blood stasis in such cases in which the nephritic retinitis develops. In this class of cases there is a hypertension limited to the retinal vessels, not accompanied by intraocular hypertension. Neither hyper- nor hypo-intraocular tension are factors in themselves, for the production of intraocular hemorrhages. In a series of various primary anemia patients with relative low blood pressure, no intraocular hemorrhages occurred, while in a corresponding series of primary anemias, with relative high blood pressure, intraocular hemorrhages did occur. This particular phase of intraocular blood pressure and systemic blood pressure in the anemias is a study that is now being carried on at the Cook County Hospital, and a report thereon is forthcoming (Suker and Bellows).

A rise in the diastolic pressure in the retinal arteries, even in the absence of choked disc, indicates also an increased intracranial pressure. This fact has been established by Bailliart. And, I have on many

*Read before the Section on Ophthalmology of the Michigan State Medical Society, Kalamazoo, September 14, 1932. A series of twenty-four lantern slides of the fundus of hypertension cases illustrated the paper.

An acknowledgment is made of the assistance of my associates, Drs. B. Cushman and M. Jacobson, and the ophthalmic resident interne of Cook County Hospital, Chicago.

occasions verified this in my service at the Cook County Hospital. Very frequently in brain tumor cases increased intraocular vessel hypertension precedes the appearance of the choked disc. In these cases the intraocular vessel hypertension is not constant but variable, which fact may account for the delayed appearance of the choked disc. When the choked disc is developed, then the intraocular and intracranial hypertension are on a par and more or less constant. Variation in this intraocular vessel hypertension produces a variance in the amount of the choked disc.

Arteriosclerosis without hypertension does not cause retinal hemorrhages. This is rather axiomatic, but clinically a constant observation. Personally, in the hundreds of arteriosclerotics, with or without other cardio-nephritic complications, that I have seen in Cook County Hospital, substantially verifies this assertion. This observation is also in conformity with the views of Lange, Wessely and Lian. Geraldi⁷ has the same view. In this class of cases, heredity is more than a seeming coincidence. Many cases show an equilibrium disturbance in the neuro-vegetative system and also in the hemoral metabolism, such as hyperglycemia and hypercholesterolemia. The blood calcium content is diminished, almost in every instance.

An endocrine disturbance is not to be disregarded in this class of arteriosclerosis without hypertension. The fundus vessels show no lesions unless hypertension is also present.

To further accentuate the usefulness of a fundus examination with red free light, Heider's⁸ examination of 300 cases of hypertension with and without kidney complications shows a close relationship between the fundus vessel changes and the kidney lesion. He was able to correctly diagnose the systemic lesion in 80 per cent; in 10 per cent not quite an accurate diagnosis was made, while in the remaining 10 per cent an incorrect diagnosis was made. I do not regard this statement in the slightest as an exaggeration, as my internes and myself have closely approached these figures in our examination of cases in the wards at the Cook County Hospital.

Heider, as well as myself, has accepted Volhard's classification in hypertension and nephritic cases, namely,

Genuine vessel disease, *i.e.*, (1) essential hyperpiesis and malignant sclerosis, and

(2) primary kidney disease. There is a passive reflex mechanism in the blood pressure rise in the essential hypertension, and an active hemotoxic mechanism in the malignant sclerosis in the acute and chronic nephritis, lead poisoning, and in the kidney of pregnancy.

In the essential hypertension, the fundus veins are turgid, of moderate caliber variations, often distinct corkscrew veins in the macular area, which become less and less in the moderate sized veins and disappear entirely in the large ones. The arteries are usually of normal caliber, though occasionally narrowed, seldom tortuous. There is never an alternating contraction and dilatation. Compression of veins by the arteries is always present, and many times there is a moderate peripapillary edema. There is frequent pigmentary disturbance in the macula. There seldom is an extensive edema of the retina, but frequently small, discrete hemorrhages, and occasionally a thrombosis.

In malignant sclerosis the large retinal veins are often narrow and are only broad in association with cardiac decompensation. Marked venous stasis is present when there is increased spinal fluid pressure in association with papilledema. The macular veins are never as distended as in essential hypertension, while the smaller veins are frequently narrow. In young subjects this macular vessel change is not present. But, the large arteries are decidedly narrowed and the small ones difficult to locate or follow, even in the absence of the frequent retinal edema. There are marked changes in arterial vessel caliber proceeding as far as actual obliteration, and always marked vein compression by a crossing artery. A prominent feature of malignant sclerosis is the widespread narrowing of both veins and arteries, especially of the smaller vessels. There is an accompanying edema of the disc and retina, fresh and old hemorrhages scattered throughout the retina; partial or complete thrombosis is not uncommon. In such cases one must not overlook the fact that we are dealing with a genuine type of kidney sclerosis. It is often difficult to differentiate between a malignant sclerosis and a chronic nephritis, but in the former the macular venous tortuosity are much more obvious than in the latter.

In considering the systemic development of hypertension, the small arteries and veins

must be carefully considered and evaluated, hence a scrutinizing ophthalmoscopic examination is the prime essential consideration. The character and distribution of retinal vessels, large and small, and their pressure in relation to the general systemic blood pressure, is an important finding. The changes in their caliber and the regularity in course, or tortuosity and association with fundus edema must be noted. The normal or abnormal structure of the vessel walls, and the presence or absence of various types of fundus hemorrhages, whether recurrent, single or multiple, and if along the vessel walls, discretely or promiscuously distributed in the retinal or choroid is not to be overlooked. The changes produced in the vessels by sclerosis, and their relative position, whether deep or superficial in the retina, whether corkscrew, and whether the blood current is wide, narrow, regular or intermittent, are observations to be carefully noted. The presence of pronounced arterial and venous pulsation in retina, even the intensity of color, which has a bearing on the general tone of the fundus hue, and the shape of the vessels, ribbon-like or tubular, must be noted. Whether the vessels show thrombosis, new blood vessels or aneurysms, and if there are vessel transudates or corpuscular diapedesis, and if there is accompanying retinal pigment migration are to be noted.

Any one or several of these numerous clinical fundus findings should impel one to make a scrutinizing systemic investigation of the cardiovascular renal status, as well as the possible presence or absence of intracranial complications.

In toxic hyperpiesis, structural changes in the vessel walls causes an early narrowing with an increase in the white stripes. This is an extremely early vascular change. The veins are much thickened and markedly tortuous, which is not so marked as in cases of primary hyperpiesis. While stripes along the arteries and marked compression of veins by arteries is perhaps almost a pathognomonic sign of toxic hyperpiesis. These white lines along the vessel wall are due to sclerosis of the tunica perivascularis; the greater the sclerosis, the more accentuated the lines.

Guist⁹ demonstrates two types of vascular changes in the retina in hyperpiesis, coinciding with the classification of hypertension into primary and toxic; in the former the vessels are essentially normal and in the lat-

ter both vessel systems are markedly affected.

In primary hyperpiesis the corkscrew tortuosity of the small veins is pronounced, as they are the first to yield to the pressure, because of their thin walls.

The retinal function is well preserved even in the face of marked arterial degeneration. The so-called Leber's spot in the macular area is always the result of retinal vessel hypertension, and is, according to Bailliart,¹⁰ quite diagnostic of Azotemic nephritis. Bailliart considers the circulating pathology as the etiology of renal retinitis, and that retinal hemorrhages, papilledema and retinal exudates result from the nephritis.

It seems to me, however, that an unknown toxin in nephritis is a further factor in the production of the retinitis. This particular toxin is absent in the simple hypertension cases. The kidney is not involved early in the simple hyperpiesis, though eventually it usually will be. In renal retinitis or toxic retinitis, the nephritis precedes the retinitis, or both may develop simultaneously when the toxin accentuates or aggravates the condition.

In the idiopathic hyperpiesis the retinal blood pressure is not correlated to the general pressure and is usually 0.45 to 0.5 of the brachial diastolic. In the nephritic it is as high as 0.7 and even higher.

It is a grave symptom when the retinal blood pressure greatly exceeds the systemic diastolic pressure, even when the ordinary manifestations of renal retinitis are wanting. In these cases the retinal hypertension denotes also an increased intracranial pressure.

Increased retinal arterial tension, therefore, is of diagnostic and prognostic import and aids in differentiating between renal retinitis and idiopathic hyperpetic retinitis.

Bailliart¹¹ is not certain whether the arterial obliteration causes the hypertension or whether the latter causes the former. From my observations I should say that both go hand in hand. The small arteries are early, either wholly or partially obliterated in every case of hypertension. It is to be noted that arteriosclerosis can and does exist without vascular hypertension, but the reverse does not hold true, and yet, in most instances retinal arteriosclerosis is caused by hypertension.

In cases of arteriosclerosis who complain of headaches and vertigo or simple dizziness

ness, the sclerotic retinal vessels bespeak the same process within the brain. This sclerosis of the retinal vessels in such cases does not signify that there should be any retinal hemorrhages, thrombus or embolus, neither does it mean the interference of vision or the possible presence of optic neuritis or simple disc edema. But it does point to the fact that these cases of hypertonia are apt to pass on to the grave form of hypertension with its possible cardio-renal involvement, beyond the usual minor cardiac derangements, which are more or less an accompanying symptom in arteriosclerosis.

In primary hypertension, the course of the large retinal arteries as a rule is not altered, but in the very final stages there is some narrowing, with accompanying light streak and moderate tortuosity. The small arteries are unchanged in their course, yet they are so thin as to be scarcely observable.

The veins are the main diagnostic feature. In the early stage the large veins are scarcely altered, while the smaller ones are corkscrew. In the later stage the large veins are somewhat tortuous and broadened, the small ones markedly twisted and broader than normal. The vessel compression of vein by artery is rather frequent in most cases. Choked disc and hemorrhages are not accompanying lesions and are of little diagnostic import.

In the toxic hypertension, the arteries are usually accompanied by light streaks. Their walls are thickened and volume of blood seemingly decreased. The small arteries are faintly visible. The large and small veins are tortuous but never corkscrew.

The difference in the tortuosity of the small veins is a differential sign between primary and toxic hypertension.

In the toxic hypertension all vessel walls suffer changes, especially the small peripheral ones in the retina and choroid, while the most noticeable vessel wall changes are seen on the disc.

Without further detailing many more important clinical facts relating to the fundus vessels and types of hypertension, the following rather terse sentences will suffice for a summary and conclusion:

AXIOMS IN HYPERTENSION—CLINICAL AND SYMPTOMATIC

1. Hypertension in the young is very rare as a whole.
2. Retinal hemorrhages, thrombosis and embolism in the young are rare.

3. Systolic and diastolic pressure must be proportionate to avoid retinal hemorrhages. Extremes of pulse pressure, high or low, favor hemorrhages or extravasations of plasma or serum.
4. Involutionary sclerosis is not usually associated with hypertension.
5. The maintenance of any toxin initiates or aggravates hypertension.
6. Essential hypertension usually eventuates into some form of nephritis, with a secondary heart condition.
7. Basically essential hypertension is a toxicity of some nature and a disturbance in the functional relationship of the vasomotor system (and vagotonic) and sympathetic system.
8. Spasm of the tunica muscularis in hypertension is common and accounts for some of the hemorrhages.
9. Retinal, cerebral and renal arteries are end vessels and constitute a peripheral heart.
10. Arterial retinal pulsation is never a normal state, but always indicates an organic valvular heart lesion or increased intraocular tension. Pulsation of retinal veins on the disc is not pathologic, but distal venous pulsation is pathologic.
11. Normal physiologic activities such as pregnancy and menopause as a rule do not produce permanent hypertension or vascular changes; but functional disturbances are not uncommon, and are not permanent.
12. A persistent high pulse pressure is conducive for sclerotic vessel changes.
13. A persistent low systolic and diastolic pressure favors retinal hemorrhages—even in the absence of atheroma or sclerosis.
14. Peripheral retinal hemorrhages in so-called physiologic senile albuminuria and diabetes depend on local sclerosis, and are not such a danger; and, in such cases, the hypertension is rather a negligible factor.
15. The presence or absence of hypertension or the extreme variations in blood pressure modifies the prognosis of nephritis and diabetes.
16. Essential (idiopathic?) hyperpiesis selects the ages between thirty-five and forty-five.
17. Pathologic hypertension selects victims between forty-five and sixty plus.
18. Any circulating systemic toxin influences blood pressure; and, if persistent, causes permanent hypertension and vessel sclerosis.
19. Arteriosclerosis is really an angiosclerosis.
20. Peripheral retinal hemorrhages are absorbed and recur frequently, cause no pain and relatively little visual disturbance, as compared with the central venous thrombosis and embolism of the central artery.
21. Retinal hemorrhages as such are principally venous and not arterial.
22. Retinal vessel embolism is usually associated with cardiac valve disease.
23. Central vein thrombosis (retinal) occurs often in nephritis than in diabetes.
24. Intraocular embolism is rare and thrombosis is common.
25. All hemorrhagic states of the retina in diabetes are usually preceded by more or less edema of the retina.
26. All hemorrhagic states of the retina in nephritis are usually not preceded by an edema of the retina.
27. Senile nephritis and diabetes are often associated.
28. Arterial sclerosis and atheroma are not synonymous, but can be associated or even develop simultaneously.
29. Atheroma per se is not prone to cause hypertension.

30. Retinal thrombosis or embolism primarily does not cause choked disc.
31. Peripheral retinal hemorrhages and choked disc or optic neuritis in patients about thirty, with evidence of albuminuria, are suspicious of an intracranial lesion. In such cases the intraocular vascular hypertension is often present, and systemic hypertension is absent.
32. Arterio-vascular changes, disturbances and hemorrhages in the retina are more often dependent upon general systemic cardio-vascular lesions than on pure intraocular lesions.
33. Intraocular blood pressure and hypertension are not related, and have very little in common.
34. Local vessel wall degeneration is the main cause of retinal hemorrhages. Atheroma of the vessel must be marked and the perivascularis membrane more or less sclerotic, as it acts as a supporting wall. When hemorrhages do take place, then the same are usually small and linear in character, as then the blood is in the perivascular channel. This holds true for the smaller and not the larger caliber vessel.
35. Increase of arterial tension increases liability to rupture, and is perhaps the principal cause.
36. Atheroma is more frequent in essential hypertension than in ordinary sclerosis.
37. It is seldom a tear in the artery or vein which causes the hemorrhage, but it is rather a diapedesis of cells and a transudation of the serum and blood plasma.
38. Hemorrhages usually arise from veins and not arteries. In thrombosis or embolism of the large vessels, rupture of wall may take place.
39. A sudden drop in blood pressure in these hypertensive cases is conducive for hemorrhages into the vitreous, especially in the presence of glaucoma.
40. The retinal hemorrhages may all be absorbed or some may remain, either leaving their marks as atrophic areas or patches of colloid areas.
41. Unless the main branches or disc vessels are implicated, very little if any visual disturbance ensues.
42. Cicatrization of the arterial walls causes a narrowing of the caliber and eventually a mere white line—so-called endarteritis obliterans.
43. Spastic contraction of the muscularis media is not uncommon in cases of hypertension—either ocular or general—and does give rise to hemorrhages.
44. Sclerosis of the vessels is frequently a hyaline degeneration.
45. Chronic inflammation of the intima of the vessels causes hyperplasia of the interstitial connective tissue and thickening of adventitia leads to sclerosis—the vessel is more homogeneous and uniformly more refracting. (Leber.)
46. Arterial retinal pulsation is due to the loss of the elasticity of the vascular system and there is a rise in the pulse wave in systole and carried to the retinal vessels as in aortic regurgitation.
47. As the artery compresses the vein, it causes so-called banking, and may even indent the retina or seemingly protrude into the vitreous.
48. Arteries usually are more rigid than veins, because of difference in anatomical structure.
49. Veins are often pushed aside or become tortuous when parallel to artery; because of the vessel wall sclerosis, their length is shortened.
50. The veins are often flattened and appear band or ribbon-like.
51. Ampulliform dilatation of the vein is usually on the distal side of the compression.
52. Sclerosis of the perivascular channel of the arterioles causes the centripetal deflection of the vein. It occurs when the vein crosses the artery or vice versa, or runs parallel to artery.
53. The greater the arteriosclerosis and sclerosis of the perivascularis, the greater the venous compression. All these changes are permanent, no matter what is the underlying cardiovascular renal lesion.
54. Retinal vessel aneurysm is very uncommon.
55. Fusiform and sacculated aneurysms do now and then occur, especially when the vessels cross one another or are intimately side by side. It is the nutritional disturbances in the vessel walls or the friction between them caused by the arterial pulsation which causes an erosion at the site of the contact and thus causing a fusion of the vessels. At times, however, there are congenital aneurysms, but these are exceptionally rare manifestations. Aneurysms seldom occur in the hemorrhagic cases.
56. Any of these aneurysms, either of the larger or smaller vessels, seldom if ever rupture.
57. The white lines on vessels are always present in nephritis, diabetes, hypertension and sclerosis, and are best seen with the red free light. These lines can be classified as follows:
 - (a) Physiologic—when confined to the large vessels on the disc.
 - (b) Moderate sclerosis—when white lines appear at the vessel crossings. The artery then does not lie directly on the vein, but appears elevated because of the sclerosis or thickening of the perivascularis.
 - (c) Pathologic when rather widespread on the retinal vessels.
 - (d) And when the large vessels are involved in large share of their course, it denotes an extreme pathology.
58. The degree of ampullæ form dilatation of the distal part of the vein depends on the extent to which it is compressed by the crossing artery and the degree of their sclerosis.
59. The perivascularis is reinforced at the crossings—becomes visible with the increasing arteriosclerosis. This is so-called perivasculitis, and seldom appears in atherosclerosis.
60. Arteriosclerosis does exist without vascular hypertension. Hypertension, however, always produces arteriosclerosis.
61. The vessels on disc and in retina run in the channels of the perivascularis, which channel is quite pronounced for the large vessels, and diminishes in visibility along the capillaries and arterioles.
62. The disc is often rather extensively covered by a transparent mesodermic membrane—epipapillaris membrane—frequently mistaken for a pathologic condition.
63. Vessels on disc are under pressure in the sagittal and horizontal diameter, and is greater than in the retina.
64. Sclerosis causes loss of vessel transparency in more or less intermittent areas, and causes them to become copper colored. Perivascularis sclerosis appears as accentuated white lines at vessel crossings and accompanies the vessel walls for a greater or less distance from the crossings.
65. Sclerosis has a predilection for retinal and cerebral as well as for the kidney vessels.
66. Translucency of the retinal vessels is normal in the young and disappears with age.
67. Any prolonged toxic condition affecting the myocardium will also cause loss of retinal vessel transparency. Sclerosis will also cause this loss.
68. Hypertension:
 - (a) Sclerosis without increased blood pressure is the so-called physiologic or involutionary sclerosis.
 - (b) Hypertension will produce vessel sclerosis.

(c) Essential hyperpiesis has a predilection for the retinal vessels in causing loss of transparency and their color changes from rosy red to copper.

69. Involutionary arteriosclerosis—so-called atheroma—does not attack retinal or cerebral vessels very early, if at all—and then only in the advanced stages.

70. Hyperpiesis will alter the vessels early and permanently—both retinal and cerebral.

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ACUTE CRANIAL AND INTRA-CRANIAL INJURIES*

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During the period between 1925 and 1929, inclusive, there were 2,529 patients who were admitted to the Detroit Receiving Hospital with severe injuries to the cranium or its contents, or both. Of these, 441 were not x-rayed. In the non-rayed group, 374 were altogether too ill to stand the technical manipulations for x-rays. The remaining sixty-seven were in good condition and were either released or transferred to other institutions shortly after admission. In the entire group there were 2,071 cases with fracture by ray or by inspection.

It may be seen that over 500 cases with acute cranial or intracranial injuries entered the hospital annually. On going over the admission records, it was noted that during December, January, February and March, there were fewer admissions than during the summer and fall months. The age distribution was interesting (Chart I). The majority belonged in the age group between twenty and fifty. The incidence was lower between ten and twenty, whereas in the age group before ten the number was definitely higher than in the second decade. This may be explained on the basis that between ten and twenty boys and girls are more careful than the more helpless group in the first decade and the more reckless group after twenty. The great majority sustained in-

juries in automobile accidents. This is important in that the same accident may cause injuries elsewhere in the body. With direct blows on the head the possibility of coexistent injuries in other parts of the body is not as great as in cases with indirect violence.

The x-ray findings and fractures diagnosed by inspection were instructive. The fractures in this series have been grouped according to the position in the anterior third, middle third and posterior thirds of the skull. The anterior third includes the vault to the fronto-parietal junctions and the anterior fossa. The middle third extends from the fronto-parietal junction to the occipito-parietal including the middle fossa. The posterior third includes the posterior fossa and the vault extending to the occipito-parietal junction. It is true that a certain number had fractures in more

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than one of these areas but in the great majority the fractures could be classified according to this method thus simplifying the general grasp of the problem.

An analysis of the position of the fracture in 2,071 cases is interesting. In 45.5 per cent the fracture was found in the middle third of the skull. The anterior third in-

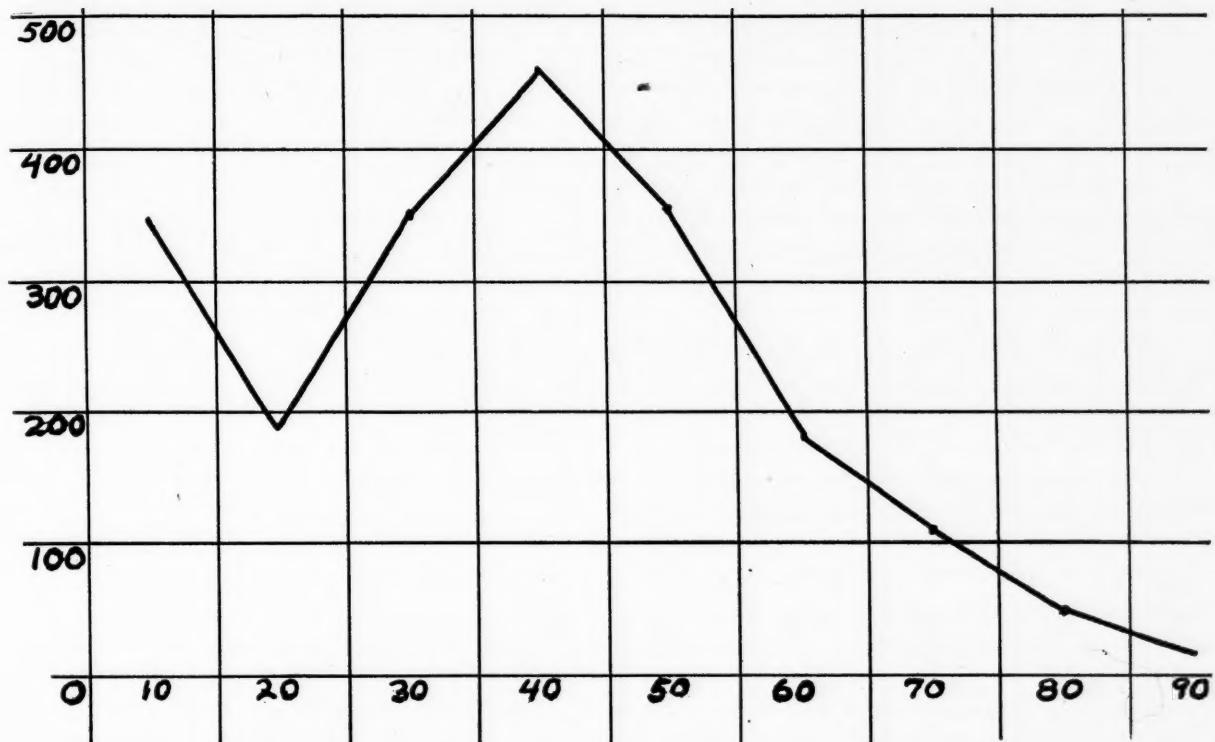


Chart I. The age distribution during four of the five years covered in this report. Note the lowered incidence of fractured skulls in the age group between 10 and 20.

TABLE I. ANALYSIS OF 125 CASES OF FRONTAL SINUS FRACTURE

Discharge from nose	
None	71
Epistaxis	52
Cerebrospinal rhinorrhea	2
Brain injuries	
None	19
Slight	50
Definite	51
Severe	5
Distribution of fractures—125 cases	
Right	58
Left	49
Bilateral	18
Compound	3
Depressed fractures—31 cases	
Right	13
Left	8
Bilateral	10
Extension of Sinus Fracture	
Into vertex	105
Into base	38
Outer wall of sinus only	11
Operations—3 cases	
Recovered	3
Died	0
Results	
Recovered	116
Died—9 cases	
Meningitis	1
Other causes	8

cluded 27.8 per cent of the cases with 125 sinus fractures and 138 depressions. The base involvement in the anterior third was 18.1 per cent. Depressions occurred in the anterior third more frequently than in the middle third. The frontal sinus fractures¹ have been classified as to incidence of brain injury, distribution, depressions, extension of sinus fracture into base or vertex, operations and results (Table I). There was only one case of meningitis in 125 sinus fractures, which speaks well for conservative treatment in these cases.

In 26.5 per cent the position of the fracture was in the posterior third of the skull. Here depressions were very infrequent and apparently serious from the standpoint of prognosis. In this particular series the mortality with posterior third depressions was around 47 per cent. Fractures extending into the base of the posterior third of the skull may be grouped according to position into two main classes. First, those which extend into the foramen magnum

(Table II), and, second, those which involve the base lateral to the foramen and therefore may pass through the jugular opening and on toward the petrous portion of the temporal bone. From a prognostic standpoint, our studies reveal that fractures involving the more central portions of the foramen are more favorable because of infrequent manifestations of associated brain damage. This is probably due to the fact that with a fracture in this situation, the force behind the blow is dispersed by the elasticity of the tissues and therefore kept where the blow was given, whereas with a more lateral fracture there is a tendency to transmission of the force to the general cavity of the cranium with consequent associated contra coup damage to its contents. This is notoriously true in fracture of the posterior third of the skull.

TABLE II. ANALYSIS OF 106 CASES OF OCCIPITAL FRACTURE EXTENDING INTO FORAMEN MAGNUM

Etiology		Brain injury	
Auto	66	None	38
Street car	5	Slight	35
Blow	10	Definite	25
Fall	16	Serious	8
Undetermined	9	Bleeding ears	
Age Distribution			
Under 10	48	Right	12
10-20	15	Left	4
20-30	10	Both	4
30-40	11	No leakage	86
40-50	12	Results	
50-60	3	Died	8
60-70	4	Recovered	98
70-80	3		

Bleeding from various body orifices is a serious complication in head injuries. Of these, the most important are bleeding or cerebro-spinal fluid discharge from the ears and nose. The latter is particularly important because it may signify fracture in the base of the anterior third of the skull, and in this series meningitis has occurred more frequently in cases of anterior third fractures than any other group. In such cases, a communication being established between the paranasal sinuses and the cranial cavity, infection may easily enter the latter. Bleeding from the ear is a serious manifestation. The 476 cases in this series (Table III) have been classified as to site, complications, x-ray findings and mortality. In cases with unilateral bleeding, the mortality has been around 37.5 per cent. Bilateral discharge is serious as evidenced by approximately 68

TABLE III. ANALYSIS OF 476 CASES OF BLEEDING FROM THE EAR

Right ear—173 cases. Mortality 37.1 per cent

Recovered—110 cases

Bleeding 110

Cerebrospinal leakage 0

Died—63 cases

Bleeding 62

Cerebrospinal leakage 1

Left ear—205 cases. Mortality 38.5 per cent

Recovered—127 cases

Bleeding 123

Cerebrospinal leakage 4

Died—78 cases

Bleeding 76

Cerebrospinal leakage 2

Bilateral bleeding—98 cases. Mortality 67.3 per cent

Recovered—32 cases

Bleeding 30

Cerebrospinal leakage 2

Died—66 cases

Bleeding 64

Cerebrospinal leakage 2

Complications

Meningitis—4 cases

Recovered 0

Died 4

Otitis media—9 cases

Recovered 8

Died 1

Mastoiditis—3 cases

Recovered 2

Died 1

X-ray findings

Unilateral bleeding

Examined—282 cases

Positive 265

Negative 17

Not examined—97 cases

Bilateral bleeding

Examined—49 cases

Positive 48

Negative 1

Not examined—48 cases

per cent mortality. Meningitis occurred in four cases with fatal termination in all. Mastoiditis occurred in three cases with one death due to associated meningitis. Otitis media was recorded in nine cases.² Such a low incidence of infective change with bleeding from the ears speaks highly of the type of treatment these patients received. If the bleeding has stopped, the ear is left alone. If there is still some discharge, the ear canal may be cleansed carefully, followed by the application of some antiseptic solution and a loose mastoid dressing. The canal is never irrigated, nor is it packed tightly. In the great majority of cases, such treatment is sufficient. As long as the patient has no complaints referable to the ears and so long as there are no unexplainable clinical findings, the ears are left alone. The less done in the form of examinations and the like, the better for the patient.

Vomiting is frequent in cases of head in-

jury. Particularly is this true in children and untreated adults. Incontinence of urine and feces is seen frequently within the first forty-eight hours. At times it can be attributed to shock, and then again it may be the result of serious brain damage with its consequent depressing effects on the entire body.

Pulse, respirations and blood pressure determinations may be of help in some cases. However, it is important to have frequent determinations in order to evaluate properly changes that may occur. On the whole, changes in temperature, pulse, respirations and blood pressure as in ideal cases of increased intra-cranial pressure occur infrequently in head injuries. An increase in or a distinct abnormality of the respiratory rate is probably a more sensitive sign of brain pressure than are the other items in this group. Particularly, blood pressures have been found of little value as to state of intra-cranial tension. One type of blood pressure finding is of serious prognostic significance, namely where the diastolic pressure is wanting and the systolic pressure is the pulse pressure. Such determinations in the adult have been unfavorable in every case. Likewise increasing and high temperatures point in every case toward a fatal result.

The neurological findings in cases of brain injury constitute a chapter in themselves. From a practical standpoint it is important that all these cases have a competent neurological examination. In a certain number, definite findings are on hand which may necessitate special treatment. Alterations in the state of consciousness are frequently seen and are most important in determining immediate treatment. However, a fracture of the skull does not always signify brain injury. About 20 per cent of the cases in this series with fracture gave no history of unconsciousness, and recovered with no untoward neurological findings.

Convulsions, paralyses and abnormal reflexes, constituting focal symptoms, should be watched for. Convulsions were seen in about 5.5 per cent of the cases. These were grouped in three classes: first, those with localized twitching of muscle groups (Jacksonian Epilepsy); second, those with generalized epileptiform convulsions; and, third, those whose attacks simulate decerebrate rigidity. From a diagnostic standpoint, Jacksonian attacks are important, for usually they signify a lesion of the brain supply-

ing the part of the body where the attack occurs. Consequently, it may be necessary to intervene operatively if other corroborative findings are on hand. However, it may be emphasized that just Jacksonian spells with no other findings to justify operation may disappear entirely within twelve to twenty-four hours with nothing more than conservative treatment. In a number of such spells simple lumbar drainage gave excellent results.

Among the cranial nerves, the most frequently involved in cases of head injury is the seventh nerve. In a recent series 11 per cent with bleeding from the ear had associated facial paralysis. In the majority there is appreciable recovery within a month. In a few, it may persist for years. In one case which has been followed up for 3 years there are still evidences of returning tonicity and nerve supply to the facial musculature. It is apparent, therefore, that some of these cases may continue recovering for years. Blindness following head injury was seen in four cases. Ophthalmological examination showed no lesion of the nerve head and no evidence of hemorrhage into the vitreous and no injury to the retina. Cases of this type are a puzzle as to causation of blindness. It is possible for a fracture to involve the optic foramen and thus press against the optic nerve. It must be emphasized, however, that such a depression could not be severe enough to cause an occlusion of the ophthalmic artery for in the acute case the fundus examination is absolutely negative. Another possibility is hemorrhage into the sheath of the optic nerve with consequent pressure against the same. A third possibility may be a sudden impact against the nerve, without necessarily a fracture in the region of the optic foramen. Extra-ocular paralyses do occur in association with head injuries.

Of particular interest are cases with third nerve palsy. They have been present in five out of seven cases of middle meningeal hemorrhage. The explanation as given is with a clot originating from the vicinity of the foramen spinosum there is a dissection of the dura off the base of the middle third of the skull, until the contents of the superior orbital fissure and the cavernous sinus are compressed. With pressure in this region there is a more frequent involvement of the third nerve because of its central position, whereas the sixth nerve, which is protected by the reflected edge of the dura, and the

fourth nerve, which is in close proximity to the bone, usually escape damage. A middle meningeal clot enlarging further dissects the dura off the concavity of the skull with consequent pressure against the brain so that in such cases it is not uncommon to see a third nerve paralysis with contralateral paralysis of the body simulating Weber's syndrome. Weber's syndrome³ was described for lesions in the brain stem, but in cases of middle meningeal hemorrhage the same picture may present itself with a lesion in the middle third of the skull and in no way associated with any change in the brain stem. This is important certainly from the standpoint of treatment.

Recent work at the Receiving Hospital by members of the staff has brought out that certain hitherto unexplained and undiagnosable lacerations of the cortex may be diagnosed if certain findings are kept in mind. I am referring to lacerations of the inferior aspect of the frontal convolutions so commonly seen in cases with fracture of the posterior third of the skull.⁴ In the LeCount and Apfelbach⁵ series of post-mortem cases with contra coup, lacerations were present in 78 per cent of the cases with fracture in the posterior third of the skull. The diagnosis of such lacerations depends upon the presence of irritative manifestations involving the face and possibly also the upper limb in the presence of a posterior third fracture.

In a certain number of cases, catatonic states have been noted and at present such states have been considered, to a certain extent at least, indicative of a lesion in the left fronto-parietal cortex, for most of these cases have associated aphasia.⁶

An understanding of the treatment in cases of head injury should always imply the proper understanding of the underlying pathology. Such a tabulation is of help and is therefore given at this time.

- I. Fracture of the skull, simple
- II. Fracture of the skull, simple depressed
- III. Fracture of the skull, compound
- IV. Intracranial hemorrhage
 - A. Extradural, due to rupture of the meningeal vessels, sinuses and diploë.
 - B. Intradural, due to pial tears, bruises or laceration of nervous tissue.
 - (1) Subarachnoid
 - a. Generalized
 - b. Localized
 - (2) Intraparenchymatous
 - a. Petechial
 - b. Massive
- V. Bruising or laceration of nervous tissue, with or without fracture of the skull.

- VI. Increased intracranial pressure
 - A. Caused by any of the above
 - B. With no demonstrable brain pathology

- VII. Complications
 - A. Meningitis
 - B. Meningo-encephalitis
 - C. Brain abscess
 - D. Pneumocephalus

It may be seen from the above tabulation that there are a certain number of conditions which are ineffectively treated by present day medicine. It is reasonable to operate on cases of extradural hemorrhage, depressed fracture with signs and compound fracture. On the other hand, the reason for sub-temporal decompression in cases of subarachnoid hemorrhage without signs is not well understood. Through a small opening in the temporal fossa, a very small amount of blood may be removed, but in the majority of cases with generalized subarachnoid hemorrhage, the collection of blood covers the entire one or both hemispheres. If the operation is performed for purposes of relieving pressure, it may be justifiable, but if it is used to decrease post-traumatic results, it is of little benefit.

The total mortality for this series of proven cranial and intra-cranial injuries from any and all causes was 27 per cent. Of these, 55 per cent expired within twenty-four hours and 71 per cent died within forty-eight hours after being injured. In cases of head injury, it should always be kept in mind that many receive not only blows on the head but often injuries elsewhere in the body. In a recent series of 138 deaths, twenty could be attributed to lesions in other parts of the body. Some had associated fracture dislocations of the spine with transverse myelitis. Others had associated chest injuries. In four cases, there was rupture of intra-abdominal organs. Particularly at the onset, it is difficult to diagnose intra-abdominal injuries, as the usual tense abdomen may be wanting.

The management of skull injuries and intra-cranial damage is a serious problem and will undoubtedly increase in importance for years to come. In the consideration of various special complications, we have already designated the necessary treatment instituted. On the whole, the treatment of skull fracture with brain injury after elimination of shock is conservative. In a recently carefully checked additional series of over 700 cases, 58 per cent were confined to bed with the head of the bed elevated and ice bags

applied to the head. Symptomatic relief was also administered. In another 35 per cent, it was necessary to resort to dehydration therapy and spinal punctures. In 7 per cent of the cases, operations were performed. On the whole, conservatism is proper, but conservatism constantly alert for complications requiring surgical intervention is imperative.

Much has been said about the value of spinal puncture in cases of head injury. In some clinics these are performed routinely on all cases. The argument is presented that removal of blood from the subarachnoid space minimizes the undesirable post-traumatic sequelæ in such cases. Of course, it is accepted by everyone that this procedure does actually lower intracranial pressure and as such it is very valuable in the acute case. However, the presence of blood in the spinal fluid may denote one of several pathological changes, in many of which the removal of blood from this space as such would not materially alter conditions. Further, the fractional method of drainage of spinal fluid is of little value when the bleeding is caused by lacerations of the brain tissue or when clotting has occurred. What spinal drainage can take care of is blood in suspension. In a very few where the diagnosis is obscure, it may be performed. In general, punctures are not performed until eight to twelve hours after admission, for during this period the patients are in shock. Any such procedure to decrease intracranial pressure may cause fresh bleeding. Our service has seen three deaths following soon after lumbar puncture although one may not be sure of the puncture as the causative factor. Lumbar punctures are of great help in acute post-traumatic headaches, in unconsciousness and drowsiness which lasts over twelve hours. It has been used with success in some cases with Jacksonian epilepsy, aphasia, focal motor manifestations, etc. Nevertheless we do not feel that lumbar punctures are indicated routinely in every case.

The medical treatment of increased intracranial pressure is sufficiently settled. In the so-called edema of the brain, characterized by a long-drawn-out post-traumatic period of incomplete consciousness, operative treatment along the lines of decompression have seemed of little assistance. Rather should dehydration solutions be employed. Of the various substances used, we prefer 50 per cent glucose in 100 c.c. doses intra-

venously every 8 hours. It is not only a dehydrating but it also is a nutritive agent. Hypertonic glucose solutions administered by rectum have proven to be less accurate. In connection with dehydration, it is impor-

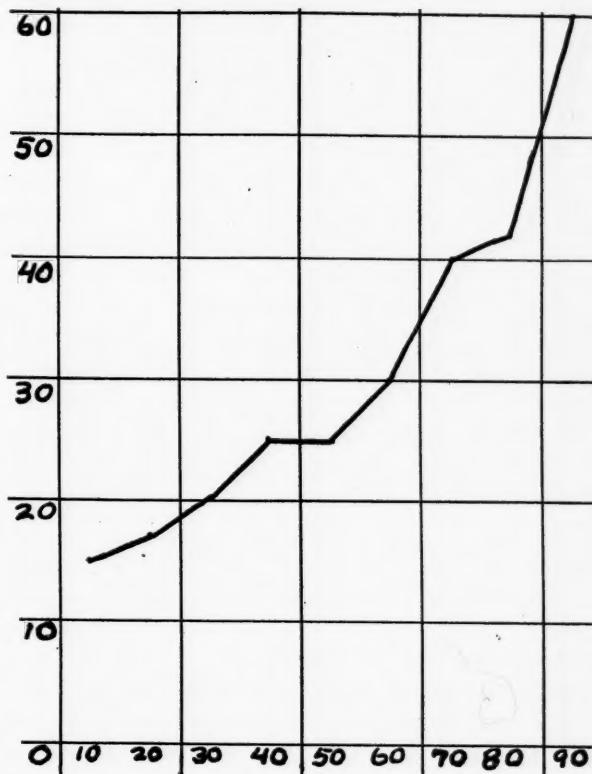


Chart II. Mortality percentage in relation to age distribution. Ninety per cent of individuals suffering fractured skull at the age of sixty expired.

tant to be sure that the patient receives sufficient fluid for metabolism. We give at least 900 to 1,000 c.c. of fluids daily and if the patient is unconscious it may be necessary to administer it rectally, or better still by hypodermoclysis.

The operative treatment in case of head injury is standardized at the present time. Every one will agree that compound fractures should be repaired as soon as the patient's condition permits. Cases of middle meningeal hemorrhage should be operated on, as well as depressed fracture with signs. Cases of subdural hemorrhage with progressive signs are also considered fit for operative approach. Very few are operated upon for mere increased intracranial pressure. For methodical purposes we will discuss these various operative topics.

Compound fracture: Frequently compound fracture of the skull should and can be taken care of early. However, it is im-

portant to allow the patient to recover sufficiently from shock before any operative intervention is attempted. In one case we waited as long as 24 hours before debridement and the wound was closed tightly at the conclusion of the operation with no ill effect. Particularly when repairing bones in the frontal region is it important to save the appearance of the patient insofar as possible. In this region, if practicable, the entire area of depression may be removed as a whole and after adjustment all of the pieces may be replaced. Primary healing following this procedure usually occurs and an excellent cosmetic result is obtained.

Middle meningeal hemorrhage: After the diagnosis of epidural hemorrhage is arrived at, it is advisable to do one or two diagnostic trephine holes in order to insure that the conclusion is correct. This is followed by an osteoplastic flap and removal of the clot in its entirety. In some cases where there are too many lacerations and some infected, it may be better to perform the well-known subtemporal decompression. However, in a certain number of cases, this approach would not be sufficient for the proper evacuation of the epidural space.

Depressed fractures: Simple depressions with signs are fit for operative approach. Here again it is important to emphasize that the operation should not leave the patient with serious visible deformities which may become a psychic factor. Particularly in the frontal region the bloc elevation of the area of depression should be kept in mind. If the patient has no signs, it is left to his judgment as to whether or not the deformity is treated. Many of these cases have no untoward symptoms because of an area of depression somewhere in the skull. It seems that the experimental work of Naffziger and Glaser⁷ in animals is worthy of serious consideration. They state that a depression which has not torn the dura is not causative in the production of post-traumatic sequelae in the absence of initial brain damage at the time of the blow. Where pieces of bone actually pierce the dura, we feel we are justified in intervention. At any rate, a careful study of rays and clinical manifestations will allow one to arrive at a correct conclusion.

Subdural hemorrhage: In the presence

of large collections of blood giving rise to focal manifestations, we feel justified in intervention. However, the results in these cases are far from satisfactory. The majority die in the hospital and the very few that survive are mentally unfit for long periods of time. The approach here is either a subtemporal decompression or a low flap.

Anesthesia: Particularly when working in the frontal region, block anesthesia should be used. The blocking of the supra-orbital and supratrochlear nerves on both sides with additional infiltration in front of the ear to block the auriculo-temporal will give a large insensitive area for operative work. Local infiltration should be used wherever possible except in cases where there is a surrounding area of infection. In cases of middle meningeal hemorrhage, we prefer a general anesthetic because it causes a sufficient amount of intra-cranial pressure increase to obliterate the epidural space left vacant following removal of the clot.

SUMMARY

1. During the five year period covered by this report, 2,529 patients with acute cranial or intracranial injuries were treated. Automobile injuries account for the great majority of the total. The total mortality from all causes was 27 per cent.

2. The treatment was mainly conservative. Intravenous glucose has steadily replaced other dehydrating solutions, spinal punctures and decompressions.

3. Operative treatment has been reserved for compound fracture, intra-cranial hemorrhage with signs, and some cases of depressed fracture.

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MICHIGAN'S DEPARTMENT OF HEALTH

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PREVALENCE OF DISEASE

The prevalence of measles is rapidly on the increase in Detroit and vicinity. Last year, during the time the rest of the state was having the greatest number of reported cases on record, Detroit was experiencing a considerably lower prevalence. This year it is Detroit's turn and true to expectancy the number of cases reported from there is high. Elsewhere in the state the prevalence of measles is low, but that of German measles is unusually high.

Diphtheria continues its decline. The season about to close is far below any year on record. This should not be taken as an indication that diphtheria is about to become extinct. This is a cyclic disease, and based on past experience we may sooner or later expect a rebound and an increase in prevalence. Active immunization should keep this expected return down to a minimum and never again should there exist the wide prevalence or high fatality rate of a couple of decades ago.

Perhaps most remarkable in the behavior of communicable diseases at present is the almost complete absence of smallpox. During the first three months of 1933 only 13 cases were reported for the entire state and the diagnosis in a number of these was quite doubtful. We should not be fooled into thinking that the people of the state are well enough vaccinated to account entirely for this very striking reduction. The longer this low prevalence of smallpox continues, the more apathetic will the public become regarding vaccination. At least in this respect history repeats itself, and when conditions are right and virulent smallpox makes its appearance it will again take a heavy toll before sufficient people can be immunized to halt its progress.

C. D. B.

MEASLES VERSUS GERMAN MEASLES

Notice of changes in the regulations of the Michigan Department of Health pertaining to measles and German measles has recently been sent to all physicians and health officers.

These changes provide for greater len-

iency in respect to German measles. Contacts of this disease are not in any way restricted, placards on the house are not necessary, but cases are to be reported and excluded from school for one week from onset. Physicians who have not received notice of these changes in the regulations may secure a copy from either the local health officer or the Michigan Department of Health.

Local health departments have the right to make more stringent regulations if they so desire but the recent changes eliminate the necessity of much loss of school on the part of those exposed to the relatively quite unimportant disease, German measles. The greatest significance that may be attached to German measles is the frequency with which it is confused in diagnosis with scarlet fever and sometimes with measles.

NEW TUBERCULOSIS REGULATION

A new regulation designed to aid in the control of tuberculosis in schools was adopted at a meeting of the State Council of Health on March 8, 1933, in accordance with Act No. 314 of the P. A. of 1927. It reads as follows:

"No teacher employed in any school who is suffering or afflicted with an active tuberculosis shall be permitted to continue to teach, and no pupil in any school who is suffering or afflicted with the adult type of tuberculosis shall be permitted to continue in school, as long as the lesions remain active. The x-ray findings, interpreted by competent authority, shall be considered as conclusive evidence of the existence of active tuberculosis."

SUNDAY CALLS

Telegraph is more certain and satisfactory than telephone in reaching the Michigan Department of Health on Sunday. While workers are on duty in the laboratory during most of Saturday afternoon and Sunday, the capitol telephone exchange is closed and consequently long distance calls frequently fail to reach their destination. A telegram stands a much better chance of securing results.

CHILD HYGIENE

Women's classes which are being held in Lenawee County by Dr. Edna Walck are having a record attendance, as 608 women last week attended classes in 14 centers organized for this purpose. Dr. Alexander is conducting a similar series in Macomb County with an attendance slightly under 400 each week.

Child care classes are being conducted in Berrien, Branch, Lapeer, Genesee, Clinton, Alger and Schoolcraft Counties.

A series of Women's classes has been started in Hillsdale County with Bertha Wellington, R.N., giving instruction in nutrition for prospective mothers and mothers of infants and young children. Dr. Edna Walck will follow Miss Wellington and complete the series.

A series of Women's classes to be conducted by Dr. Ida Alexander in Cass County beginning the latter part of April has been organized by Esther Nash, R.N. A series will be held in Manistee by Dr. Edna Walck.

Martha Giltner, R.N., prenatal nurse for the department, began a prenatal nursing program in Midland County on January 17, 1933, at the request of Dr. A. W. Newitt, County Health Officer. From that time to March 18, Miss Giltner has had under her

supervision 127 prospective mothers. The two nurses connected with the County Health Unit are working with her on this program.

INCIDENCE OF RINGWORM OF FEET IN A UNIVERSITY GROUP

ROBERT L. GILMAN, Philadelphia, examined during the spring of 1932, 500 consecutive men students taking the regular prescribed gymnasium course and 285 women students. In the two groups 60 per cent of the cases were positive among the men and 57 per cent among the women. The most constant symptom among these students was the occurrence of immoderate foot sweating, an increase of 50 per cent over the noninfected group. The management of ringworm of the toes has become unnecessarily involved and complicated. Consistently good results can be obtained by proper foot hygiene, that is, the frequent changing of shoes and socks, and the thorough drying of the toes after washing. Then the use of wet compresses or antiseptic soaks, followed by the use of ointments, either bland, stimulating or keratolytic, is in order. Finally, one has recourse to stronger lotions and powders in the chronic type of infection. For compresses or soaking foot baths in the acute stage, the author uses saturated solution of boric acid or Burow's solution, 1:16. For the subacute, and in some acute cases, potassium permanganate, 1:4,000, has no equal, followed in the acute cases by a 5 per cent ointment of ammoniated mercury applied in and around the toes after they have been thoroughly dried. In the chronic stage with either maceration or fissures, the alternate use of a strong stimulating tar and Whitfield's ointment is in order. An alcoholic solution of 4 per cent salicylic acid and 8 per cent of resorcinol applied to the toes or a foot powder used in the daytime, is helpful in those cases associated with excessive sweating.

MICHIGAN MEDICAL BULLETIN SURVEY*

County	Issue	Size	No. of pages	Pages of Ads	Pages of Read.	Copies sent	Issues per yr.	Adv. Rates 1 1/2 1/4	Cost to print	Profit	Pay of Editor
Oakland 110	Mon.	6x9	8-16	3-4 1/2	10	110 40	10	10. 5. 3	40.00	none	none
Jackson 76	Mon.	6x9	12-24	6-8	6-16	76 200	10	7. 4. 2	27.50	\$200 per yr.	none
Kalamazoo 133	Mon.	6x9	4	0	4	133 105	10	0. 0. 0	13.50	none	none
Genesee 150	Bi-mon.	6x10	4	1	3	150 20	26	20.15.10 per 2 issues per mon.	.55	none	none
Ingham 100	Mon.	6x9	8-12	1-1 1/2	7-10 1/2	100 100	10	12. 6. 4	30.00	none	none
Calhoun 110	Mon.	6x9	12-16	6-8	6-10	110 75	10	6. 4. 2	26.50 37.50	\$100 per yr.	Profit on ads
Wayne 2500	Weekly	6x10	24	8-10	16-14	2500 200	52	22.14. 8	Printed by commercial concern on a profit share basis. No profit at present.		

Saginaw, Bay, Washtenaw and St. Clair County Medical Societies do not publish a bulletin.

*We are indebted to Dr. Harry B. Knapp for this survey of bulletins published by the various county medical societies mentioned.

THE JOURNAL

OF THE

Michigan State Medical Society

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MAY, 1933

"I hold every man a debtor to his profession, from the which as men of course do seek to receive countenance and profit, so ought they of duty to endeavor themselves, by way of amends, to be a help and ornament thereunto."

—Francis Bacon

EDITORIAL

AN OBSERVER AT LANSING

The Wayne County Medical Society has furnished an observer at Lansing during the present session. Being a member of the Wayne County Medical Society himself, the editor has hesitated to express himself on this feature of Society activities. However, so much commendation has come from members of the Michigan State Medical Society from outside Wayne County that we no longer veil our modesty. We employ the term *lobbyist* with certain reservations. It has been so customary for special interests to

be represented in legislative halls, or corridors, both state and national that the term has come to smack of self interest with all that goes with it.

The so-called lobbyist, however, can render a very valuable service to the legislature if he be well informed and of the right kind. The only interest the medical profession has is that of public and personal health. In this case might be mentioned two important measures among others in which the medical profession is interested: one is House Bill 398 embodying necessary changes in the medical practice act to make it conform with present day requirements; the other is Senate Bill 106 providing for a board of professional examiners. The member of the house of representatives or the senator whose object is to serve his constituents to the best of his ability will seek all the information possible from those in a position to know the requirements. The observer or lobbyist representing the medical profession is in a position from long and intimate acquaintance with the legal aspects of medicine to offer valuable information on such subjects.

PHYSICIANS AS LEGISLATORS

The *Wayne County Medical Bulletin* advocates that more physicians permit their names to go on the ballot for election to civic and legislative bodies, such as council, board of education and state legislature. There are fewer physicians representing the city or municipalities than any other professional class. Lawyers are a long way in the lead. Nearly two-thirds of the presidents of the United States have been lawyers, while no physicians have held that office. Lawyers have predominated in state legislatures as among the professions. The reason for this is in part due to the fact that lawyers can delegate their work to other members of the firm where they are organized into groups, while medicine is such an individual matter that it demands the doctor's personal attention. However, the physician of the proper type would make a good representative. He is not likely to be led away by fads or by emotional appeal. He has been trained to think independently so that could he be prevailed upon to run for office the city or state as the case may be would benefit by his judgment.

LABORATORY SERVICE

The suggestion has been made that the city or other municipality provide laboratory facilities, both x-ray and clinical, where physicians may send patients of limited means to receive necessary roentgenological and clinical laboratory examinations free. Considering the financial condition of the great majority of people such a course would mean an extra burden on municipal hospitals inasmuch as some one must pay the bill if the patient does not. With depleted treasuries which prevail all over this state, the suggestion is particularly ill advised.

Such a course, it goes without saying, would be ruinous to the practice of those physicians who devote their entire time to roentgenology or clinical laboratory diagnosis, who, we believe, are willing to accommodate themselves to the demands of the situation and to reduce their charges to a minimum, even in some instances to the bare price of the materials used, and the municipal laboratory can do no more than this.

A TREE THAT SHOULD BE SPARED

The economic depression has led to a movement towards wholesale reduction in state expenditures. As a rule this attitude on the part of law making and law administering bodies is commendable. Economy should be the order of the day, although, to use a homely expression, coming at this late time, it is like locking the stable after the horse has been stolen. A wise discrimination should be made in the matter of retrenchment. We have in mind our institutions of higher education. The grammar school is admitted to be a universal necessity, yet if education does not proceed farther than this, its value is not only limited but in some respects open to question.

It is to the high schools and to the state university we must look for leadership in science and law and medicine. The University and the Michigan State College belong to us and render the state service of untold value both directly and indirectly. The University of Michigan is not only nationally but internationally famous. In the process of pruning, great care should be exercised not to impair its usefulness. It is men, not buildings, that make institutions of higher learning great.

"NOTHING IN EXCESS"

The effects of the depression have been so far reaching that in some directions results have been actually beneficial. In England they have manifested themselves in pronounced sobriety, as almost any American visitor to England and the continent might testify. In Canada, even in spite of the repeal of prohibition, drinking appears much less than during the preprohibition period. Banquets were at one time synonymous with gormandizing. Today they are much simpler as well as more infrequent.

One hundred years ago Thackery expressed his reaction to the civic festivals of his time, "What can be the meaning of a ceremony so costly, so uncomfortable, so unsavory, so unwholesome?" He continues:

"It was, I say, like something out of a Gothic romance, or a grotesque fairy pantomime. Feudal barons must have dined so 500 years ago. . . . A stream of meats, a flare of candles, a rushing to and fro of waiters, a ceaseless clinking of glass and steel, a dizzy mist of gluttony, out of which I see my old friend of the turtle soup making terrific play among the peas, his knife darting down his throat.

"Who is to be called upon to pay two or three guineas for my dinner now, in this blessed year 1847? Are there no poor? Is there no reason? Is this monstrous belly-worship to exist for ever?"

The present generation in this country, as well as in England, cannot be charged with intemperance in eating and drinking as were our forebears of over a century ago. The past three years have witnessed even greater continence in eating and drinking, yet the health of the nation has not suffered. There is, however, a limit beyond which health may be adversely affected. The ancient Greeks had a proverb which made them a great people. It was, "nothing in excess," in other words *temperance*.

AN EXPLANATION

A letter was received from a physician who has been known to us for a number of years, whose ability and judgment we have always held in highest regard. The doctor protests against the publication of the comment in the March Number of this JOURNAL which appeared under the heading *Hospital*

Service. The objection appears to be to the inclusion of all hospitals among the alleged offending institutions. We admit that it is a dangerous thing to indict as a class any group or kind of institution for the transgressions of what may be only a few. And certainly in the article in question, those hospitals which have not essayed to enter the field of medical practice in competition with individual members of the medical profession are not included among those the writer had in mind.

While state medical journals are supposed to voice the views and to advance the interests of the medical profession, both general practitioners as well as members of the various medical and surgical specialties, they aim as a rule to exercise a spirit of impartiality and good will towards all ancillary institutions.

In order to obtain as far as possible a competent view of the subject of *Hospital Practice*, outside anything that may be held by this JOURNAL, the editor has asked Dr. J. A. MacMillan to comment on the subject in question. Dr. MacMillan is chairman of a committee that has just finished an investigation embodied in an exhaustive report auxiliary to the medical and social survey that has been under way for over a year under the auspices of the Michigan State Medical Society. While Dr. MacMillan's letter, which appears elsewhere, is not with the authority of the committee, it has been written by one who perhaps has given as much time and thoughtful study to this and other subjects pertaining to social and economic medicine as any other member of the medical Society.

THE BANKING SITUATION

Perhaps the most momentous as well as distressing event in the experience of physicians during the past two months is the debacle that has befallen many banks in this state, particularly the two largest in Detroit. Inconvenience and loss are no name for it. Little has been written of any definite news value, though the banking situation has occupied the front pages of the newspapers longer than any other event of which we have any recollection. Extra after extra has poured from the presses with a ray of hope which was almost as quickly extinguished. Industry has been at a standstill. The ranks of unemployed have in-

creased. Greater numbers have applied to the welfare, only to be met by a frozen exchequer. Not only have private hospitals been handicapped in their efforts to provide the necessary care for the sick, but municipal hospitals have threatened to close their doors. The members of the medical profession have nobly carried on, often unable to meet the expenses of their practice. Debts remain unpaid. In embarrassment the great majority of honest and self-respecting persons are compelled to offer the excuse that the banks have all their working funds, and some others perhaps may use the situation as a convenient alibi for postponing the fulfillment of obligations. The relation of creditor and debtor is such that no self-respecting person wishes to be debtor for any length of time, since such persons always strive for equilibrium of obligation. In olden times the debtor was the slave of the creditor, who could at will cast him into prison or press him into servitude; while modern civilization no longer permits such physical relations, there is still more or less opprobrium attached to the person who treats his obligations with levity, which makes us wish

For a home on a quiet street
A safe retreat from the d— deadbeat.

As we view it, banking has suffered among other things from the absence of the *scientific method* which has produced every advance in the industrial world. We would hesitate to consider the average banker dishonest. He is as honest as the citizen in any other calling. Is there not a possibility that his methods are antiquated? We have been told that promotion among the ranks of bankers depends often more upon influence than upon superior knowledge and ability. The larger the banking institution, like the great business or other corporation, the less the individual counts, so that he becomes often no more than a technician or accountant. The scientifically trained mind has accomplished remarkable results in other fields of human endeavor. Why not the trained economist in banking?

SPECIALIST

It seems only a short time since what was considered the passing of the general practitioner was predicted and lamented. He has not passed out, however, but appears to possess a vitality that will enable him to wit-

ness the obsequies of his confrère, the specialist. During prosperous times specialism in medicine, as well as in everything else, flourishes. Patients select their own doctors for gastrointestinal complaints, or eye, ear, nose, and throat troubles without consulting the general practitioner. The period of the boom is past—perhaps never to return. The factors that tend to stabilize prizes and income at a much lower level than those which prevailed prior to 1929, are numerous; perhaps the tendency to the elimination of manpower from industry through invention, is the greatest factor. The result is the decentralization of population. Cities become smaller. The demand for real property becomes less. This means that the average income is curtailed until a new normal is reached. Specialization, owing to the limitation of the field, requires a higher fee commensurate with the service demanded. Not able to meet it, patients become fewer so that, as a result, the erstwhile specialist is compelled to step down and broaden his field. He is thus compelled to re-enter general practice where he began his professional career. The general practitioner, on the other hand, enlarges his field and diagnoses and treats conditions that not long ago were by common consent the field of the specialist.

SPRING DAYS

Come, lovely flowers that bloom in May,
Come, bonnie birds that sing,
Oor robins an' oor daisies say
Come, guid glad days o' spring.
Oh! daisy days,
Ma hert it says
Ah luve your ways,
Oh daisy days.

Come, grass an' trees that green appear,
Come, breezes, blow an' sing
Glad tones of mirth an' joy an' cheer,
Come, guid glad days o' spring.
Oh! balmy days
An' rippy bays,
Ah luve your ways
Oh balmy days.

Come, clouds an' rain an' sunshine too,
Come, shrubs an' vines that cling
To fence an' oak, an' shine wi' dew,
Come, guid glad days o' spring.
Oh! sunny days
Wi' cloudy haze,
Ah luve your ways
Oh sunny days.

—WEELUM

OH! OH! ENGLISH

"It is, nonetheless, a fact that in the educational scale, from the average man up to the university

executive, there is a lack of comprehension of matters radiological, that ranges from discouraging public misconception, through pitiful medical misinterpretation, on to unjust administrative decisions, along with dangerous legislative enactment, all ascribable to inefficient pedagogic superficiality."—From a scientific paper which appeared in an eastern medical journal.

PHYSICIANS CHARITABLY MINDED

(Detroit Free Press)

There is no reason to doubt the accuracy of the report by the American Medical Association that over 200,000 of the more than million hospital beds in the country are now unoccupied. But the subsequent conclusion that the United States has become "vastly over-hospitalized" is a statement that lends itself to scrutiny.

How many of these 200,000 beds are unoccupied today because there really is not need for them, and how many are vacant because people who are ill and ought to have hospital care haven't any money and are obliged to get along with whatever attention they can secure in their homes and from charitably minded physicians? And happily most physicians are charitably minded.

People of small means in fragile or ill health are not those who are suffering least from a situation which is keeping between 10,000,000 and 12,000,000 people in forced idleness.

CRISIS AND BRAIN POWER

(Manchester Guardian)

It seems a curiously cold form of comfort which has just been administered by Sir Henry Gray, a well-known surgeon who has been addressing the Montreal branch of the Royal Empire Society. He seems to think that the existing financial troubles of the world are as nothing to the mental disorder which may yet overtake us. He hesitated, he said, "to suggest a possibility of a widespread mental crash" to match the various financial ones that are now in progress, but he immediately went on to announce that "the innate capacity of the modern brain is even more out of control at present than are the immense forces let loose by its want of foresight." There are few people whose blood will be chilled by tales of that sort. Thanks to the Providence which supplied it, or assisted at its age-old development, the innate capacity of the human brain remains remarkably little affected by its owner's social mistakes; an instrument which could survive experiences like the Black Death and the Thirty Years' War is not going to be collectively terrified into one large lunatic asylum because it has been discovered that half the gold in the world cannot ensure that American banks can meet their creditors. If man's social and financial arrangements functioned with a quarter of the instinctive equanimity that has been shown at all periods of history by the mental make-up which deals with each day's difficulties as they arrive, what a much more smoothly administered place the world would be. Certainly it is man's brain which has made man's financial troubles, but there is another and deeper aspect of that useful instrument which keeps him going, troubles or no. It is like that classical instance of the French peasant still ploughing on the outskirts of the battle; it still lives and works from day to day, even though theories to which it once trusted lie in ruins. In the mass the mind of man is a dependable instrument in spite of its mistakes. And if it got us into our present mess it is equally certain that it will have to get us out.

MEDICAL ECONOMICS

THE NEW DEAL IN MEDICINE

J. C. S. BATTLEY, M.D.
PORT HURON, MICHIGAN

I.

Looking backward one may follow the history of medicine from the dawn of the Minoan and Babylonian cultures, into the clear day of Greece, through the long night of the Dark Ages, through the breaking light of the Renaissance, into the clear brilliance of our own day. Medicine has been inseparable from man's long upward struggle from the dark. There have been times when, under persecution, it has gone into eclipse. But when it seemed weakest it was gathering greater strength. Its progress is exemplified in the lines of Bryant,

Truth crushed to earth shall rise again,
Th' eternal years of God are hers.

It is from an historical viewpoint that we must look at the problems of the profession of medicine as they present themselves to us in these changing days. It may be truthfully said that crises are recurrent in the affairs of great institutions. They must be always on guard lest the forces of reaction pull them down. A depression of unusual severity has brought forward questions which are requiring us to examine and to defend our position, for there are those who, knowing little of the inner light derived from a union of science and art by which we live, would seek to alter our course.

Although we are now passing through a period of great strain to our economic and social structure, such times have been unknown before. Economic and social adjustments follow in the wake of great wars. It is well known that England did not fully recover from the Napoleonic Wars until 1840. Mr. Esmé Wingfield-Stratford in his book "Those Earnest Victorians" says:

The year after Waterloo was one of unprecedented misery. Industry was no longer doped by the demand for munitions, the labour market was flooded, and England's customers abroad were either too much impoverished to pay for her goods, or were beginning to use the new machinery on their own account, and protect their home markets against British competition. To crown all this, the harvest was one of the worst ever known. Unemployment, distress, discomfit, were everywhere rife. The fruits of victory had no sooner been grasped than they turned to ashes.

In George Eliot's novel "Middlemarch" we have a description of medical life in those times. The picture of Tertius Lydgate bears the semblance of reality for it is known that the author modeled her doctor after her then young friend, the late Sir Clifford Allbutt. The experiences of Lydgate read strangely like those of a present day physician. It would help young doctors over more than one stile if "Middlemarch" were a required reading before graduation. They would realize that their problems are in many ways the same as those that their predecessors of many years ago had to confront and to surmount. Yet the profession of medicine lived through those times to see better ones.

II.

In times of stress it is easy to lose sight of the essence of matters and to substitute for it irrelevant and unrelated factors. The basic idea at the root of all great institutions can usually be expressed in a few words. In medicine it is simply to help the

sick. A part of the Hippocratic Oath is, "Into whatever houses I enter, I will go into them for the benefit of the sick." Any consideration of medicine that is not based on this premise must fall short of a complete understanding of the problem. Since the advent of big business many laymen and some physicians have come to think of medicine as a business. A business is organized essentially for the making of profits. Medicine is organized to help the sick and therefore falls into a different category. Methods for making medicine more efficient have been devised and all sorts of commercial practices have been applied to it. These, though helpful in some ways, have failed, as might be expected, in their main application for the reason that medicine, not being a business, is not amenable to business methods. In truth, much of the difficulty that doctors are now experiencing is the result of attempts to impose business practices on medicine. Finally has come the majority report of the Committee on the Costs of Medical Care which advocates the socializing of medicine and the establishment of a type of practice that would be nothing less than a medical bureaucracy that could not help but have unfortunate political implications.

Medicine is standing at one of the many cross-roads of its history. Shall it become socialized or shall it retain its traditional character of independent individual practice? That some change is due is apparent because the help that it is the province of medicine to extend to the sick is not being equitably distributed. The successful application of new ideas to medicine must always satisfy two requirements: first, the free choice of physician, and, second, the maintenance of close personal relation and confidence between patient and physician. These requirements cannot be divorced from the principle of helping the sick. They constitute the keystone of the medical arch and any scheme that does not take them fully into account is doomed to ultimate failure whether or not it is the acme of modern efficiency.

From the very fact that human beings are not responsive to passage along an assembly line, it follows that the practice of medicine must be to some extent loose jointed and flexible. The profession is attached by nature as well as by tradition to the theory of individual initiative and liberty. This is deep rooted in its character as two thousand years of experience show. Indeed, it must be so if we are to carry out the idea of helping the sick, for not infrequently little science is required to help a sick man. Rather an abundance of sympathy, assurance, and tact is needed, the application of which is an art. "Wherever there is a heart and an intellect," said Hawthorne, "the diseases of the physical frame are tinged with the peculiarities of these." It must be emphasized that there is a difference between curing and helping the sick.

Sir William Osler said in "Æquinimitas," ". . . by the historical method alone can many problems in medicine be appreciated." The brilliant achievements of the Greek intellect lay dormant through the Dark Ages submerged beneath a mass of soothsaying and astrology. Before medicine rose from the night of medievalism to its present position it was on the level of a trade. Its characteristics were quackery and fetishism and its main object that of making money. It was not until the sixteenth century that the spirit of inquiry which characterized the Greek epoch began once more to show itself. For three more centuries the doctrines of church and state hampered its progress and only within the last hundred years have we been able to shake off the shackles of dogma and authority. We still suffer from our medieval inheritance for superstition in the practice of medicine is not unknown as any practitioner can testify.

In scientific achievement we have attained an excellence which even the heyday of Greece cannot match. In the practical application of medicine, however, we lag years behind actual knowledge. Paracelsus, who lived in the first half of the sixteenth century, once said, "It is erroneous to speak of fever as if it were a disease. The name fever refers to the heat of the disease and the heat is merely a symptom. It is neither the cause nor the substance of the disease." As to the pertinency of this assertion Paracelsus might be living today. Few people aside from the especially informed look upon fever as other than a disease. If we treat the fever they are satisfied. A man may know all about the internal troubles of his automobile but next to nothing about the possibilities of trouble in his own body. He may know the kind of gasoline and oil on which his car runs best but nothing of the principles of correct diet. From this undesirable state we are rapidly emerging owing to the wide spread of modern education in general and of medical information in particular. It would seem dubious wisdom to adopt a system which would again impose the restrictions of authority upon the free practice of medicine.

III.

The discrepancy between the extent of our knowledge and the extent of its application is a noteworthy fact in the present medical situation. Our medical schools are devoted to the training of students in scientific medicine and research. After spending his undergraduate years and perhaps some post-graduate years in their environment, the young doctor experiences a rude shock on being thrown into the cold water of outside practice. He finds that medical knowledge is only part of the armamentarium that he requires. The other requirements are what for some time he may think of as secondary and in which his university courses gave him no preparation, namely, patience, sympathy, tact, and an infinite capacity for dealing with small things. For awhile, it may seem to him that the fish are not worthy of his rod. From continually seeing a certain interesting disease on the hospital wards he is lucky if he sees one case in five years. In the hospital he gave orders, nurses carried them out, and results followed. In practice patients do not always carry out orders, nor do they always take advice and results are not always forthcoming.

The doctor finds that the practice of medicine is much like the croquet game in Alice in Wonderland, for when he is about to hit the ball the hoops move or the mallet flies out of his hand. Again he finds that he is working in a competitive environment which is not always pleasant. In short he comes to learn that a physician earns his living by the sweat of his brow as everyone else does, that there are no great financial rewards, and that the medical life finally resolves itself into an adventure for bringing help and comfort to suffering fellow creatures. It is this last that counts. For a few short years we stand at the zenith of our scientific opportunity and then a multitude of uncontrollable factors, ill health, family considerations and other fateful circumstances sweep us beyond it. But helpfulness we can always retain and in the end it is the main guy rope of life for the physician.

The recent death of a beloved uncle in my own family enabled me to realize this as I seldom have before. For a time I was not a doctor but a member of a family that stood bravely by awaiting with a smile the dreaded summoner. Each day the doctor came bringing some little message of comfort to patient and family. Between the patient and his physician there came about a tacit understanding and

an acceptance of the inevitable. One day my uncle said in a tone of perfect assurance and resignation, "How long does the doctor say it will be now before the end comes?" Can words describe the comfort and strengthening aid that a physician can bring to a dying man? Surely the real firing line of medicine is not in the laboratories and wards of hospitals but in the towns, villages, and hamlets scattered all over the country.

IV.

Speaking on the subject of the role of the private practitioner in preventive medicine, Sir George Newman, in the 1926 Annual Oration of the Hunterian Society, said:

At no period in English medicine has there been such a bold and significant attack upon epidemic diseases by the medical practitioner as that which characterizes the eighteenth century. From 1720 onward we have an astounding record of the pioneering efforts of practitioners to study and understand and grapple with these diseases.

And again:

It was part of the imagination and adventure of the critical, rationalistic, and inventive spirit, yes, and of the larger sympathy of man with man which in all departments of human endeavour made the eighteenth century, "the great heroic age of England."

It is not without significance that since the Great War the outstanding scientific achievements in medicine, the isolation of thyroxin, the discovery of insulin, the development of the liver extract treatment for pernicious anemia, have been made on the North American continent. Yet the heroic age of medicine in America will not consist of fresh conquests in the laboratory and in the wards of hospitals. It will be the age that will bring the achievements of scientific medicine to every door and finally kill the dragons that continue to prey upon us, for dragons confront us today even as they did the heroes of old. One of them is the inertia which prevents the wiping out of smallpox, a disease for which we have a means of absolute prevention. Another is the indifference which allows the ravages of diphtheria, the chief cause of death in children under fifteen years of age, when they might be completely eliminated. Still another is the anomaly of an age in which with an actual excess of physicians thousands are starving for adequate medical care.

The next hundred years will see as never before the development of medicine as an art. It is only with such a development that the full impact of scientific knowledge can be passed on to the common people. The twentieth century in America has so far seen a renaissance of beauty. Everywhere beauty is making itself manifest. Architecture is crystallizing into noble buildings. Art galleries are bringing to us the beauties of old and new civilizations. The music of great symphony orchestras is being flung through the air until the night fairly drips with melody. Religion is emphasizing the beauty of the spiritual adventure. A similar development may be expected in medicine. The greatest service in the medical life is not covered by the word scientific. The helpfulness which is the real mission of the physician depends as much on the beauties of personal relationship and spiritual uplift. He must be an actor and an artist as well as a physician. Stimulating as this prospect is we must ask ourselves with dread how it can come about with the free initiative required by any artistic venture stifled by socialized medicine.

V.

Nineteenth century medicine must undergo many changes if it is to survive in this strange new cen-

tury. Our policy regarding the practical application of medical knowledge has been largely to sit beneath our own vine and fig tree, none making us afraid, and wait for the world to come to us. The doctor has always been a gentleman and there has always been a certain reticence to gentlemen. Some things are just not done and pushing one's self unduly to the front is one of them. But we must now prepare to push ourselves to the front before others take the leadership from us. Schemes of medical practice conceived by lay minds unmindful and unheeding of the necessities of good medical practice are springing up everywhere. These are represented as being superior to the usual methods. The public is getting a distorted notion of what good medicine consists. If the potentialities of medical science are to be translated into successful application it is the practitioners in town, village, and country who must militantly carry the banner forward.

Any appraisal of our present condition must be made against the background of the industrial revolution which has enveloped us. Smoking mills and huddled cities have taken the place of a diffuse country life. Our daily existence has been moulded by commercial influence and medicine has not escaped it. It is difficult, in the modern industrial world with its periods of unemployment and dislocations of life arising from the rapid adoption of mechanical devices, to distribute medical care freely and equally to all classes of the population. Some plan of sickness insurance may become necessary to bear the burden of medical care. Whatever form it takes it must leave the patient free in the choice of his doctor and must in no way hamper the personal relation between them. In sound insurance the cost is borne by the insured. So it must be in medical insurance. Paternalistic schemes of paying for medical care by taxation can have no place in sound sickness insurance.

This view is supported by the British experience with unemployment insurance. Evidence taken by the Royal Commission on Unemployment Insurance was generally to the effect that the British scheme of unemployment insurance, which is supported largely by taxation, was never actuarially sound at any time. The testimony of Mrs. Sidney Webb maintained that, "the intervention of a third party—that is to say, the Government, free to change, at its will, the rates of contribution and benefits, and even the eligibility to benefit—takes the matter at once outside the category of an insurance policy as the term has hitherto been understood." One suspects that the same situation would arise in a government administration of sickness insurance. In the development of plans for sickness insurance those who are most concerned, physicians themselves, should take a leading part. Leadership must not be left to lay organizations who are primarily interested in profits and often in the exploitation of the medical profession, nor to governmental groups whose activities will result in bureaucratic control.

Civilization is drifting like a battered and rudderless ship in the night. The dark hours are passing and the pale dawn of the new century begins to fret the clouds of doubt and despair. Into a world distraught, medicine can bring a message of comfort and hope. When we were children we always felt better when the doctor came and the doctor to-day can take a leading part in the rehabilitation of society. We must carry on with the determination which Columbus showed when he set out to find a new route to the Indies, braving the terrors of a voyage during which even hope seemed gone, and which is so inspiringly set forth on the Columbus Monument in Washington, D. C.—To the memory of Christopher Columbus whose high faith and indomitable courage gave to mankind a new world.

CORRESPONDENCE

THE PRACTICE OF MEDICINE BY HOSPITALS

(To the Editor of the Journal of the Michigan State Medical Society)

In the March issue of this journal there is an article on Hospital Practice, a subject which at the present time is attracting much attention from the public as well as from the medical profession. During the past three years it has become painfully apparent that unwarranted expenditures of capital have been made in the industries, institutions and among the people generally. It is not surprising, therefore, to find that hospital construction and enterprise should have reached limits which now must be considered extravagant. When we look backward on the period of frenzied spending, we must admit that during that time the hospitals of this country have reached a high standard of perfection which has contributed much to safe surgery, accurate diagnosis, and improved facilities for other forms of medical practice. I think it may be stated that the hospitals in our age have made immense contributions to the progress of medicine and surgery; however, while admitting all this, the pertinent question has been raised in many quarters and in the above mentioned article, "Have hospitals the right to practice medicine, and if so, to what extent?" An answer to this question would involve a very wide discussion of such questions as indigency, contagious diseases, public health, industrial surgery, and Army and Marine hospitals.

I believe it is the consensus of opinion that certain patients suffering from contagious diseases should be hospitalized and the patients cared for by the staff of the hospital. There is some difference of opinion in regard to the necessity for special closed hospitals for tubercular patients, crippled children and the insane. The word "closed" is used here to mean limited to the staff of doctors employed in the institutions. In a general way, to answer the question of the right of a hospital to practice medicine or surgery hospitals may be divided into three classes:

1. The tax supported hospitals.
2. The hospital founded on charitable donations.
3. The independent investment hospitals.

It is, I believe, an injustice to the medical profession for a tax supported hospital or tax exempt hospital, which is virtually the same, to practice medicine or surgery on pay patients. Such hospitals are in direct competition with the private practitioner, who is taxed to support his competitor. It is obvious that a hospital having been founded upon, and being supported by, charitable donations, should not enter the business of competitive medical practice. This is a vicious perversion of the tacit or expressed intention of the original founders and those to whom the donations were intrusted. It is most unfair to those in control of such hospitals to use the means given for charity to enter the competitive field of medical practice.

Now, it seems to me, that the status of a hospital that represents the investment from private means of an individual or group, is quite different. Such a hospital is not tax supported, nor has it been established by solicitations of charity. Many of those independent investment hospitals in this country are engaged in the practice of medicine and surgery and the services they render to their patients are of

a high order. It would seem to be conceded by the public and the medical profession that a hospital that is not supported by taxes, nor by charitable donations, has a right to practice medicine and surgery.

Regarding this question from another point of view, it may be stated I believe that tax-exempt hospitals should not engage in medical practice. In recent years there is a great relative increase in the number of patients receiving medical care in clinical groups, hospitals and other institutions, and a corresponding reduction in the practice of private physicians. This is probably the outstanding phenomenon that marks the trend of present day medicine. A clinical group with a responsible chief in control and with certain other features of this new deal is commendable; however, insofar as a hospital encroaches upon individualistic competitive practice or renounces the physician's personal responsibility for the outcome of his service or eliminates the direct interest of the physician on his patient, medical practice by a hospital must be regarded as directly pernicious to the medical profession and ultimately to the public.

J. A. McMILLAN.

Detroit, April 1st

SOCIETY ACTIVITY

OFFICIAL CALL

To the Officers, Fellows and Members of the American Medical Association:

The eighty-fourth annual session of the American Medical Association will be held in Milwaukee, Wisconsin, from Monday, June the twelfth, to Friday, June the sixteenth, nineteen hundred and thirty-three.

The House of Delegates will convene on Monday, June the twelfth.

The Scientific Assembly of the Association will open with the General Meeting held on Tuesday, June the thirteenth, at 8:30 P. M.

The various sections of the Scientific Assembly will meet Wednesday, June the fourteenth, at 9 A. M. and at 2 P. M. and subsequently according to their respective programs.

EDWARD H. CAREY, *President.*
FREDERICK S. WARNSHUIS,
Speaker, House of Delegates.

Attest:

OLIN WEST, *Secretary*

Chicago, Illinois, March the twenty-fifth.

POST GRADUATE CONFERENCE

Port Huron—Harrington Hotel

Thursday, May 4, 1933

Auspices of Michigan State Medical Society
and

Department of Graduate Medicine—University of Michigan

T. F. Heavenrich, *M.D., Councilor, presiding*
4:30 P. M. Pelvic Inflammatory Diseases
Norman F. Miller, *M.D., Professor Gynecology and Obstetrics, Ann Arbor*
5:30 P. M. The Anemias
A. C. Curtis, *M.D., Department of Medicine, Ann Arbor*
6:30 P. M. Dinner
7:15 P. M. Problems in Medical Practice
J. D. Bruce, *M.D., Vice President of the University; Director, Dept. of Graduate Medicine, Ann Arbor*

7:45 P. M. Acute Suppurations of Nose, Throat and Neck

A. C. Furstenburg, *M.D., Professor Otology-Laryngology, Ann Arbor*

Doctor: This is your special invitation to be present. Bring a friend. You will profit handsomely. A cordial welcome awaits.

T. F. HEAVENRICH, *M.D., Councilor.*

POST GRADUATE CONFERENCE

Bay City—Wenonah Hotel
Wednesday, May 3, 1933

Auspices of Michigan State Medical Society
and

Department Post Graduate Medicine—University of Michigan

Paul R. Urmston, *M.D., Councilor, presiding*

10:00 A. M. Care of the Heart in Middle Age
Robert Novy, *M.D., Detroit*

11:00 A. M. Circulatory Problems in Relation to Obstetrics and Surgery
E. D. Spalding, *M.D., Detroit*

12:00 Noon Luncheon

1:00 P. M. Cardiac Arrhythmias and Heart Failure Management
Frank N. Wilson, *M.D., Ann Arbor*

2:30 P. M. Diets in Cardiac Disease
Mrs. Dorothy S. Waller, *Ann Arbor*

LICENSING LAWS

During the latter part of March there were introduced in the Legislature three bills pertaining to the licensing of physicians and surgeons and chiropractors.

The first bill known as Senate Bill No. 106, File 116, was introduced by Senator Upjohn on March 27. The title of the bill is as follows:

"To prescribe the educational qualifications of applicants for license to practice the healing art, as defined herein; to create a board of professional examiners and to define the powers and duties thereof; to prescribe penalties for violations of the provisions of this act; and to repeal all acts and parts of acts inconsistent with the provisions of this act."

The bill provides for a board of seven members who shall be chosen from teachers of professional rank at any university or college in this state authorized by law to confer the bachelor of science, bachelor of arts, master of science or master of arts degrees.

Section 3 of the bill defines healing art to mean "to examine into the fact, condition or cause of human health or disease, or to treat, operate or advise for the same, or to undertake, offer, advertise, announce or hold out in any manner to do any of said acts, for compensation, direct or indirect, or in the expectation of compensation." The bill exempts dentists, optometrists, chiropractors, nurses and those who treat by means of pray.

Section 4 of the bill makes it mandatory that all those who intend to practice the healing art shall, before applying to any Board of Registration having the power to issue licenses to practice the healing art, secure a certificate from the board of professional examiners. To obtain this certificate the applicant must present credits of at least thirty semester hours of college work or to have passed an examination before the board. If he takes the board's examination he must present a total of fifteen High School credits and take an examination in English Language, Biology, Chemistry and Physics.

If this bill is passed it will become mandatory for

every person who desires to practice the healing art to first obtain a certificate of pre-medical education as outlined in the proposed law.

On March 28, Representative Rulison introduced House Bill No. 398, File No. 404. This bill makes certain amendments to the present law governing the practice of medicine and surgery.

The first amendment provides for a board of ten resident electors who shall be legally registered physicians and have been in practice for at least six years. This amendment does away with the old section that designates that the board members should be from four different schools of medicine. The second amendment authorizes the board to waive examination of graduates of accredited medical colleges. The third amendment clarifies the powers of the board in regard to the revocation or suspension of a license. The next amendment classifies the violation of the law as a felony and provides for a fine of \$1,000, or imprisonment not to exceed three years.

The next provision is that a physician must file a copy of his license with the County Clerk in each County where he practices.

The salary of the Secretary shall be fixed by the Legislature but provision is made that he may receive additional sums for extra or special services in carrying out the provisions of this act as they may be voted to him by the board. The members of the board are to receive only their actual travel and hotel expenses when attending meetings of the board.

The next important change is a section that authorizes the Attorney General, Prosecuting Attorney, a member of the board or any citizen to maintain a suit against violators of the law. By reason of changing the violation from a misdemeanor to felony it is now possible to insure a court injunction against violators. This provision makes it possible for the Attorney General to proceed in a case, especially in counties where the Prosecutor is reluctant to issue a warrant.

This bill also includes an amendment which authorizes the board, in fact it makes it mandatory, for the board to suspend the license of any person who does not maintain a legal residence in this state. This latter provision will do much to aid the Doctors who are permanently located in what are known as the resort regions of the state and whose practices are encroached upon during the resort season by doctors who spend one or two months of the year at these resorts during their vacation periods and then return to their own state for the resumption of their legal practice.

On March 27, Representative Hatch introduced House Bill No. 389, File No. 395. This is a bill to create a separate board of chiropractic examiners. The board is to be composed of three chiropractors and all those who desire to practice chiropractics must have 2,750 class hours of instruction and pass an examination in the following subjects: anatomy, physiology, histology, chemistry, pathology, bacteriology, diagnosis, hygiene and public health and the theory and practice of chiropractics. The bill defines the practice of chiropractics to be "the science of locating and removing any interference with the transmission of nerve energy without the use of drugs or surgery."

SURVEY REPORT

At a meeting of the Committee on Survey of State Medical and Health Agencies, held in Ann Arbor on March 22, 1933, the Committee accorded detailed attention to a critical survey and analysis of the factual data in its possession, determined the

length of time required for tabulation, appraisal, editing and publication, and for the formulating of the Committee's conclusions and recommendations and reached the following conclusions:

1. That it will require six weeks to tabulate, edit and print the factual data in the Committee's hands.
2. The Committee will require four weeks to review all these data and to formulate its final conclusions and recommendations.
3. It will require at least one week to print the completed report and accomplish its distribution to Delegates, Officers and County Societies. The Committee purposed to make every effort to complete its work by June 10, 1933.
4. The report will contain some 100,000 words. The Committee is of the opinion and recommends to the Council that arrangements be made for regional groups to meet and study the report before its presentation to the House of Delegates.
5. The Committee expresses as its opinion that at the present time none of its findings indicate the need of special legislative action. Where the solution of problems do indicate the need for legislation such legislation will be related solely to County and City governing bodies and not to the State Legislature.

W. H. MARSHAL, *Chairman.*

COUNTY SOCIETIES

GRAND TRAVERSE-LEELANAU COUNTY

The regular monthly meeting of the Grand Traverse-Leelanau County Medical Society was held March 7, 1933, at the J. D. Munson Hospital, Traverse City.

Dr. B. B. Bushong of Kalkaska was admitted to membership.

The secretary gave a report on the Secretaries Conference just held at Grand Rapids.

Dr. James Maxwell of the University Hospital, Ann Arbor, gave a thoroughly scientific talk on "Complications of Middle Ear Infections."

Dr. R. M. Nesbitt, also of the University Hospital, gave a talk on "Prostatic Disease" covering in considerable detail the history and development of the cauterity punch operation for hypertrophied prostate.

Following a 6:30 steak dinner at the Park Place Hotel, a social evening was held in regular Traverse City style.

E. F. SLADEK, *Secretary.*

GRATIOT-ISABELLA-CLARE COUNTY

The March meeting of the Gratiot-Isabella-Clare County Medical Society was held in the Wright Hotel, Alma, Thursday, March 23, 1933.

Dinner was served to fifteen members and one visitor; three members came in after dinner.

Minutes of the February meeting were read and approved. Communications were read from the State Secretary and from Councilor Powers. In answer to the latter, the following motion was made and carried: "That the Gratiot-Isabella-Clare County Medical Society feels it would not be wise to call a special meeting of the House of Delegates until we have had opportunity to study the report of

the committee on survey of medical and health agencies, and instruct our delegate."

Motion was also made and carried "that we have a regular meeting in April in addition to the special meeting with the Board of Supervisors."

President Carney then took up the program, in which the following members gave short papers:

Dr. P. R. Johnson—"Scarlet Fever."

Dr. K. P. Wolfe—"Diphtheria."

Dr. B. J. Graham—"Poliomyelitis."

Dr. A. L. Aldrich—"Chicken-pox and Small-pox."

Dr. R. H. Strange—"Sequelæ of the Acute Infectious Diseases of the Eye, Ear, Nose and Throat."

Dr. A. D. Hobbs—"Mumps."

Each of these papers was discussed by some of the members, the consensus of opinion was that this was a very profitable meeting; so much so, that a motion was made, and carried, that we ask the younger members to contribute to the future programs.

E. M. HIGHFIELD, M.D., *Secretary.*

INGHAM COUNTY

CLINIC

Thursday, April 20, 1933

2:00 P. M.	Abdominal Surgery Presentation of Cases Dr. Frederick A. Coller, Professor of Surgery, University of Michigan
3:00 P. M.	Arthritis Presentation of Cases Dr. Joseph L. Miller, Professor of Medicine, University of Chicago
6:00 P. M.	DINNER
7:00 P. M.	Signs of Progress Dr. Frederick C. Warnshuis
7:30 P. M.	Present Concepts of Arthritis Dr. Joseph L. Miller

LAPEER COUNTY

The regular meeting of the Lapeer County Medical Society was held at Dryden, Mich., April 13, 1933, Dr. I. E. Parker of that village acting as host.

After a delightful dinner served at the Red Fox Inn, the meeting was called to order. The following officers were elected for the year: H. M. Best, Lapeer, president; D. J. O'Brien, Lapeer, vice-president; J. R. McBride, North Branch, secretary; delegates to the state convention, H. M. Best and J. Spencer, both of Lapeer.

Dr. F. E. Reeder, Flint, served as guest speaker of the evening and gave a very interesting discussion on "Fractures of the Pelvis," demonstrating with slides.

Out of county guests were Dr. Randall, Flint; Drs. Heavenrich and Kallory, Port Huron, and Dr. Lett, Rochester.

The society will not hold a regular meeting in May, but, instead will attend the Post Graduate conference being held in Port Huron, May 2, 1933.

J. R. MCBRIDE, *Secretary.*

MUSKEGON COUNTY

The Muskegon County Medical Society has achieved three special accomplishments during the past year, stamping 1932 as one of the organization's most successful.

Outstanding among the three is the termination of a successful first year of caring for county indigents in local hospitals at a saving of several thousand dollars to the county and a distinct benefit to the hospitals. It is believed by the society that there is no other welfare agency which has been able to lessen instead of increase the burden to the taxpayers during the past year.

Muskegon and the local society were jointly hon-

ored in the election of Dr. George L. LeFevre, a leader in the work of the Michigan State Medical Society for many years, as president for 1933. The third achievement was the endorsement of a successful candidate for county coroner.

The plan of local care for indigent sick was devised here in 1931 and approved exactly a year ago, or on December 31, 1931, when the board of supervisors signed an agreement with Hackley and Mercy hospital officials.

Prior to the adoption of the new plan, more than 200 persons were being sent annually to Ann Arbor, a distance of 200 miles, while local hospitals were more than half empty.

Under the Medical society plan, the hospitals agreed to accept the county patients at approximately cost. Members of the society agreed to care for the patients at a nominal fee.

During the past year about twenty persons were sent to Ann Arbor, while 200 were cared for at Hackley or Mercy hospital at a saving of several thousand dollars to the county.

Last year 234 persons were sent to hospitals at the expense of the county. More than 500 persons applied for free hospitalization during the past twelve months but less than half have merited hospital care. All have been properly cared for, many by individual physicians who have donated their services in cases where county care was not quite justified in the opinion of the medical director.

Success of the plan was indicated when the board of supervisors at the October, 1932, session unanimously voted to continue the service.

Membership of the society remained constant during 1932, two members being lost by death and two being added as newcomers. Dr. Lucy N. Eames died early in the year. Dr. Jacob Cramer died several months later. Dr. DeVere Boyd and Dr. Leland Holly are the new members.

Ten monthly dinner meetings have been held with an average attendance of twenty-three. The society boasts sixty-three members, all of whom also are members of the Michigan State Medical Society, an enviable record among county societies of the state.

The February meeting of the Muskegon County Medical Society was held Friday, February 24, 1933, at the Century Club. Twenty-seven members were present. After the business meeting Dr. Fred Cole of Detroit presented an illustrated lecture on "The Modern Trend of Prostatic Surgery." This paper was considered one of the best presented before the society for some time.

The March meeting was to be held Friday, March 31, but was postponed due to the death of Dr. A. A. Smith. Dr. Smith was seventy years old and had practiced in Muskegon since 1891. He was born April 27, 1862, near Chatham, Ont. He was educated in Canadian schools and was a graduate in medicine from Toronto University.

The April meeting of the society was held Thursday evening, April 13, 1933, in the Community Room of the Hackley Union Bank Building, Dr. E. N. D'Alcorn in charge.

M. E. STONE, *Secretary.*

SAINT CLAIR COUNTY

A regular meeting of the Society was held Tuesday, March 21, 1933, at Edgewater Inn, Port Huron, Michigan. Supper was served to twelve at 6:30 p. m. Meeting called to order by President McColl at 7:50 p. m. Eighteen members and two guests were present.

The secretary read the minutes of the two preceding meetings in outline in order to save time. Doctor MacKenzie reported upon the application of Doctor Johnson of Capac to become a member of the society, and upon motion of Doctor Heavenrich sup-

ported by Doctor Thomas the matter was laid on the table until the next meeting. The secretary read the monthly letter from the state secretary and Doctor Heavenrich followed to amplify and explain the substance thereof in greater detail. Doctor McColl, president, then instructed the secretary to submit to the chairman of the Membership Committee the names of all unpaid members in order that his committee could take steps to encourage the payment thereof.

Dr. J. H. Andries of Detroit addressed the society upon the subject, "Clinical Significance of Peritoneal Adhesions." The speaker took up the subject covering the known etiology, symptomatology and treatment thereof, as well as the explanation of the origin of the pain which he said actually originated in the subperitoneal tissues underneath the parietal peritoneum and in most cases was due, he thought, to a pulling upon the parietal peritoneum by the intraperitoneal adhesion. Doctor Andries stated that the extent of pain was in inverse proportion to the extent of the adhesion, that is, small thread-like adhesive bands as a rule gave more pain than large broad areas of adhesions. Doctor Andries demonstrated about fifty lantern slides taken from x-ray pictures of the abdomen after the peritoneal cavity had been filled with oxygen gas. These slides were explained by the speaker and the various bands of adhesions demonstrated.

The discussion was opened by Doctor Thomas, who was followed by Doctors Sites, Windham, Smith, MacKenzie, Heavenrich, Bowden and Battley. Doctor Andries then closed his subject.

The meeting adjourned at 9:45 p. m. after the president had expressed the appreciation of the society to our guest for his splendid talk.

A regular meeting of the Saint Clair Society was held Tuesday, April 18, 1933, at Edgewater Inn, Port Huron, Michigan.

Supper was served to eleven members and two guests at 6:30 p. m. Before the meeting was called to order sixteen members were present. President McColl called the meeting to order at seven forty-five p. m. The minutes of the last regular meeting were read and corrected, then approved. Three communications were read. Upon motion duly supported the Society endorsed Senate Bill No. 106 and House Bill No. 398, the two acts prepared by the Healing Arts Commission to govern medical practice in Michigan, and instructed the Secretary to write letters to both State Representatives from Saint Clair County requesting their support for these bills unamended. Doctor McColl announced the coming Post-Graduate Conference to be held at the Hotel Harrington, Port Huron, Michigan, Tuesday, May 2, 1933, the program to begin at four p. m. Doctor Armsbury of Marine City moved that the Society hold its annual social meeting on June 6 at Edgewater Inn and suggested that the various speakers before the Society during the past few months be invited to attend as guests of the Society. Supported and carried. The president then spoke of the number of unpaid members of the Society for the current year and called upon the secretary, who stated he would be glad to talk with any of the unpaid members and make any necessary arrangements with regard to acceptance of part payment or note to cover the same in order to keep the members in good standing in the State Society. Doctor William S. Summers of Detroit addressed the Society on "Recent Advances in Ophthalmology as an Aid to the General Practitioner." The address was splendid and enjoyed by all present. Adjourned at 9:45 p. m.

GEORGE M. KESL, *Secretary-Treasurer.*

NORTHERN MICHIGAN

The regular monthly meeting of the Northern Michigan Medical Society was held at the Perry Hotel, Petoskey, April 13, 1933. There was an attendance of thirty members and six guests.

The meeting began at 4:00 p. m. with a clinic conducted by Dr. Udo Wile, Professor of Diseases of the Skin, University of Michigan, Ann Arbor. Many cases covering a very wide field were presented and were very much enjoyed by all present. The demonstrations lasted two hours and an informal discussion was held after each case.

The clinic was followed by a dinner, after which remarks were heard from various guests and Dr. Wile gave a short talk on his feeling toward the general practitioner.

Motion was made that the committee on by-laws and constitution report at the May meeting. Motion carried.

Dr. Harrington was appointed to the Program Committee. The program for May will be a post-graduate conference put on by the State Society. Exact details are being worked out and all members will be notified as to the program at a later date.

ERVIN J. BRENNER, *Secretary.*

WOMAN'S AUXILIARY, MICHIGAN STATE MEDICAL SOCIETY

MRS. F. A. MERCER, President, Pontiac, Mich.
MRS. E. L. WHITNEY, Vice President, Detroit, Mich.
MRS. HERBERT HEITSCH, Secretary, Pontiac, Mich.

WOMAN'S AUXILIARY
to the
AMERICAN MEDICAL ASSOCIATION*
Eleventh Annual Meeting
Milwaukee
June 12-16, 1933

HEADQUARTERS: Hotel Pfister, Milwaukee, Wisconsin

PRELIMINARY PROGRAM

MONDAY, June 12, 1933. 12:30 P. M. Luncheon at College Woman's Club in Honor of Past Presidents, followed by National Board Meeting and visit to American Medical Association Exhibits at Auditorium. Tickets \$1.00. 7:00 P. M. Dinner for National Board, Delegates, and wives of Officers and Delegates of the American Medical Association at Woman's Club of Wisconsin. Musical Program furnished by Artist Members of Auxiliary to Medical Society of Milwaukee County. Tickets \$1.25.

TUESDAY, June 13, 1933. 9:00 A. M. General Meeting, Roof Room, Hotel Pfister, Mrs. James F. Percy, *Presiding.* 12:30 P. M. Luncheon and Bridge at the Wisconsin Club. Tickets \$1.25. 2:00 P. M. Attractions available for those not wishing to play bridge are Layton Art Gallery, Milwaukee Art Institute, Milwaukee, Museum, Curative Work Shop and Vocational School. Or, [†]Bus Trip to County Institutions, Milwaukee Children's Hospital Convalescent Home, and Washington Park Zoo. 8:00 P. M. General Meeting of American Medical Association. 10:00 P. M. Informal Dance at Wisconsin Club. Courtesy of State Medical Society of Wisconsin. Hostesses:

*All women attending this Convention whether Auxiliary Members or not are invited to participate in this entire program.

[†]Bus transportation to be paid by individuals.

Woman's Auxiliary to the State Medical Society of Wisconsin.

WEDNESDAY, June 14, 1933. 9:00 A. M. General Meeting, Roof Room, Hotel Pfister, Mrs. James F. Percy, *Presiding*. 12:30 P. M. Auxiliary Luncheon, Fern Room, Hotel Pfister. Guests and Speakers from the American Medical Association. Tickets \$1.00. 4:00 P. M. [†]Teas in Private Residences. 8:30 P. M. Light Opera, Tickets \$1.00.

THURSDAY, June 15, 1933. 9:00 A. M. General Meeting, Roof Room, Hotel Pfister, Mrs. James Blake, *Presiding*. 12:00 Noon. Trip to Oconomowoc Lake District. Luncheon 12:30 P. M., Carnation Milk Plant, Oconomowoc, Wisconsin, Transportation and Luncheon Courtesy of Carnation Milk Company. Or 12:30 P. M. Buffet Luncheon, Crystal Room, Hotel Pfister, Tickets 75c. 2:00 P. M. [†]Sightseeing Tour of Milwaukee. 6:30 P. M. "Bring Your Husband" Dinner, Fern Room, Hotel Pfister. International-House-Cabaret. Tickets \$1.50. 9:00 P. M. President's Reception and Ball, Schroeder Hotel. Hosts: The American Medical Association.

FRIDAY, June 16, 1933. 10:00 A. M. Golf Tournament. All trips start from Hotel Pfister.

MRS. ROCK SLEYSER, General Chairman, Wauwatosa, Wisconsin.

THE STATE AUXILIARY

The Public Relations Committee has found a niche in the general scheme of the medical education of the public, and we are planning that the next few years will be very active ones, profitable both to the physicians and the laity.

Mrs. A. B. McGlothlan, Program Chairman of the National Auxiliary, in her paper, "The Woman's Auxiliary," states very conclusively why we must determinedly carry on this educational work.

"The people of the United States being reasonably literate and intelligent are becoming health conscious and many are seeking information concerning the prevention of diseases. Faddists and fakers have preyed upon this awakened health consciousness with false information and quack cures; commercialists have made capital of it by advertising that their wares possess peculiar health-protecting properties; certain species of commercial writers have seized upon it to fill columns of newspapers, pages of magazines and even whole pamphlets or books with unauthentic or pseudoscientific information.

"An unwary and undiscriminating public is the victim. The great pity of the situation is that the public does not know that it is being victimized and having easy access to little besides such misinformation as that just alluded to, it frequently aids and abets legislators in making undesirable health laws and medical practice regulations for all the people.

"The public has gone 'floundering off from scientific medicine' because we have not been sufficiently diligent in providing for them the right kind of information concerning the prevention and cure of diseases, and in securing their co-operation in the promotion of community health.

"Practically all important organizations of today, groups organized to promote general social progress—the number of which is legion—have the promotion of health as a part of their program.

"In most of such organizations of men, members of the profession have the opportunity to participate, if they care to do so, and to guide the thinking and planning of the group into activities consistent with modern scientific knowledge.

"But doctors, even the specialists in preventive medicine, our public health men, do not have access to women's organizations except by special invitation, which, it is to be regretted, is not frequent enough.

[†]Bus transportation to be paid by individuals.

"These organizations which number their memberships by the millions are a powerful educational force; many of their members steer the destiny of a family; each one has a vote and is, therefore, an influence for good or bad legislation.

"Outstanding leaders in the medical profession and in the auxiliaries believe that the women of doctors' families are performing a very distinct service to the profession by meriting and attaining to leadership in the other women's organizations to which they belong, by interpreting particularly the preventive work of the medical profession, personal and public hygiene, and by bringing about community co-operation in health work under professional guidance."

Through the splendid co-operation of our County Presidents and Public Relations Chairmen, Michigan has made great progress in this educational campaign. It is inevitable that these forces will prove themselves far reaching in the near future.

COUNTY PUBLIC RELATIONS CHAIRMEN

Jackson—Mrs. J. C. Smith, 1114 West Washington Street.

Saginaw—Mrs. Frank A. Poole, 118 Cherry Street. Bay City—Mrs. P. R. Urmston, 1862 McKinley Avenue.

Kalamazoo—Mrs. Chas. L. Bennett, 527 West Lovel Avenue.

Calhoun—Mrs. M. J. Capron, 102 Anne Avenue, Battle Creek.

Oakland—Mrs. E. L. Bradley, 82 Murphy Place, Pontiac.

Wayne—Mrs. R. E. Loucks, 337 West Grand Boulevard, Detroit.

Ingham—Mrs. Robert Brekey, 520 West Morland Avenue, Lansing.

Kent—Mrs. Richard Smith, Grand Rapids.

(Mrs. Edw. G.) KATHARINE MINOR.

JACKSON COUNTY

Mrs. H. L. Hurley entertained thirty-five members of the Women's Auxiliary to the Jackson County Medical Association at her home in Jackson on Tuesday evening. Dinner was served followed by the business session under the direction of the president, Mrs. G. A. Seybold.

Mrs. E. S. Peterson gave a complete report on medical legislation in Michigan. Mrs. Thomas E. Hackett, program chairman of the year, was in charge of the program of the evening. Mrs. Margaret Denley Brier sang two arias from the opera "Samson and Delilah." She was accompanied by Mrs. Grace Winchester Wilson. Prefacing the songs Mrs. Hackett read a synopsis of the opera, which completed the presentation.

Miss Esther Chivers related her experiences while in Europe, the past summer. She spoke of attending the play "Everyman," which is given during the festival season at Salzburg annually. This was in keeping with the Lenten season.

Hostesses for the day with Mrs. Hurley were: Mrs. E. A. Thayer, chairman; Mesdames G. A. Seybold, Frank Van Schoick and John Van Schoick.

KALAMAZOO

The March meeting of the Kalamazoo Woman's Auxiliary to the Michigan State Medical Society was held March 21, 1933, at the home of Mrs. Clark B. Fulkerson with Mrs. James G. Malone as the assisting hostess. Thirty members were present to enjoy the delicious pot-luck dinner.

Mrs. F. T. Andrews was appointed chairman of the Legislative Committee and Mrs. C. L. Bennett, chairman of the Public Relations Committee at this meeting.

An amusing diversion of the evening was the roll call by the members, each member telling her name,

her husband's name, length of residence in Kalamazoo and other interesting personal facts.

A social evening was enjoyed for the remainder of the evening.

(Mrs. Frederick M.) WILMA G. BOYLE.
Secretary

OAKLAND COUNTY

The Oakland County Medical Society held its February meeting Friday, the 17th, at the home of Dr. and Mrs. Frank A. Mercer, Pontiac, jointly with the Women's Auxiliary. The meeting was conducted by the women and consisted in an address by Mr. Lee A. White of the *Detroit News*. Following the address tables were set for cards, after which refreshments were served by the social committee. At the close of the evening, the women honored Mrs. Neafie by presentation of a traveling bag, and Dr. Neafie, president of the Society, was presented with a wrist watch, as a token of esteem from the doctors of the County Society.

Mr. William Hartman, a Pontiac lawyer, talked to the Women's Auxiliary, at their March meeting, his subject being "Poor Laws from the Doctor's Viewpoint." The luncheon was held in the Willow Tea Room, Royal Oak, with about twenty-two present.

Members are looking forward to the April 21 meeting when they will be guests at luncheon of Parke, Davis & Co., makers of pharmaceutical and biological products, in Detroit.

(Mrs. R. H.) HELEN C. BAKER,
Publicity Chairman.

WAYNE COUNTY

The last monthly meeting which was held in the Wayne County Club rooms by the Woman's Auxiliary to the Wayne County Medical Society was the scene of an interesting affair, when Professor T. Paul Hickey, who was introduced to the assembly by Mrs. H. Wellington Yates, gave a very interesting talk on the "Background of the Adult."

Through the courtesy of Cameron McLean, Miss Ethel Orr presented a delightful musical program at this meeting including the Ladies' Trio for the pleasure of the Auxiliary and their friends. Social hour and tea followed the program with Mrs. V. A. Bacon and Mrs. H. W. Plaggemeyer acting as hostesses.

Mrs. Frank W. Hartman, vice president and Program chairman of the Woman's Auxiliary, extended her hospitality to the members of the Board of Directors at a luncheon at her home on Tuesday, March 7; and after luncheon, the Nominating Committee was appointed by the Board. The committee consists of: Mrs. E. L. Whitney, chairman; Mrs. J. M. Robb, Mrs. R. E. Loucks, Mrs. Charles J. Barone, and Mrs. W. H. Rieman.

Through the kind efforts of Sally Woodward, who is the radio announcer over Station WWJ for the Club women and Society folks in Detroit, the Board of Directors accepted an invitation to be shown through the Detroit News Building on Monday, March 13, and after the trip through the building a broadcasting program was presented by the News Players and then tea was served.

On Wednesday, March 15, Mrs. Claire Straith, president of the Auxiliary, entertained the Board of Directors at a Saint Patrick's bridge for luncheon at the Ingleside Club, Detroit. Those who were present were as follows: Mrs. J. H. Dempster, Mrs. Charles J. Barone, Mrs. J. M. Robb, Mrs. H. R. Leibinger, Mrs. W. H. Rieman, Mrs. Alex Cruikshank, Mrs. E. G. Minor, Mrs. C. A. Paul, Mrs. E. L. Whitney, Mrs. L. O'Recklin, Mrs. W. L. Hulse, Mrs. A. O. Brown, Mrs. P. Bernstine, Mrs. R. E. Loucks, Mrs. Floyd Straith, and Mrs. L. T. Henderson.

Another joyous affair of the season was the Musical Tea, the third in a series, given by the Woman's Auxiliary to the Wayne County Medical Society on Sunday afternoon, March 26, in the Club rooms. About one hundred and fifty persons were in attendance at this musical. It was a rare treat to have the opportunity of hearing such a famous artist as Gladys Luloff-Hyde, authority and interpreter of Olde Musicke, and of international reputation, play the Clavichorde, the Virginal, and the Piano in costume by candle light.

Mrs. H. J. Marshall, pupil of the late Emil Tiferro and Marcus Kellerman, Detroit, famous baritone and teacher, was another interesting feature of the afternoon. She whistled several numbers, including "Mighty Like a Rose," "Sylvia," "Sweet Mystery of Life," and "Love's Old Sweet Song"; she also gave a reading entitled, "The Fool's Prayer." Her whistling and handling of breath is an art in itself.

The Woman's Auxiliary and the Wayne County Medical Society held another joint social evening and entertainment on Tuesday, April 4, in the auditorium of the Maccabees Building, Detroit.

The program arranged by Mrs. Frank W. Hartman, program chairman of the Auxiliary, and Dr. Allen McDonald, chairman of the entertainment committee of the Wayne County Medical Society, was presented as follows:

1. Lillian Marshall, mezzo soprano and reader.
2. The Spartan Singers, nationally recognized quartette from Station WXYZ.
3. Judge Robert M. Toms—Lecture on Human Anatomy, illustrated by chalk drawings demonstrating important new discoveries.
4. Professor Edwin Craves—novelty dancing in costume.
5. C. C. McGill from the Board of Commerce—a monologue.
6. Lillian Marshall—Dramatic Sketch.
7. Mr. Thaddeus Wronski—Short talk on behalf of the Detroit Civic Opera.

Dr. Shore, Dr. Hookey and Dr. Connelly gave a Dramatic Sketch called the "Cure." These doctors are members of the Noon-day Study Club.

Judge Toms' lecture on Human Anatomy illustrated by chalk drawings is as follows:

"To accurately impersonate the old-fashioned or garden type of lecturing physician, I presume I should affect a Van Dyke beard and sprinkle iodofrom on my clothes, but today the modern or hot-house variety of doctor smells of gin rather than iodofrom and dresses like movie actors do, or like stock brokers did.

"Time was, when you were sick in a vulnerable spot, that you called the nearest doctor, who emptied his pipe, filled up the coal stove, put on his shoes, grabbed a handful of calomel tablets and came right over. Nowadays when you have a whale of a tummy-ache, you 'phone the physicians' exchange, where the girl tells you that she will locate Dr. So-and-So and have him call you. Eventually she locates the doctor in the card room of the D. A. C., but it looks as if he had a flying start on a 700 rubber of contract, so he phones one of his assistants who is calling on a nurse, and says, 'Drop whatever you're doing and call up Arl. 9424.' Instead of dropping what he is doing the assistant takes his time, adjusts his tie, smooths his hair and asks his girl friend to get the number. When you finally get to speak to him he asks, 'What seems to be the trouble?' 'Trouble!' you say. 'That is what I want you to find out. I think I'm poisoned.' 'Sorry,' he says, 'our practice is limited to diseases of the third metacarpal joint of the left index finger,' and hangs up. Even the gangsters have followed the doctors' example and now have specialists known as 'finger men.' Well, by this time your wife has

given you about a pint of milk of magnesia, or, if there's any left from Saturday night, a good shot of Scotch, and has put you to bed with a hot water bottle, and by the time you have dug up a doctor who specializes in tummy-aches, you don't need him.

"Or suppose twenty years ago you had a backache. You went to the wall phone, turned the crank one long-two short-one long. The doctor answered, and came right over. He asked you, 'How do you feel?' You said, 'Ouch, rotten.' 'Shucks,' he said, 'just a little cold settled in your back. Have the missus rub you good with this Sloan's Liniment. And here's some calomel for good measure. You'll be all right by morning.' And damned if you weren't. But just dare to have a backache now and what happens? You drag yourself down to the David Whitney Building, and are ejected in succession from the offices of a child specialist, a neurologist, an eye, ear, nose and throat man, an obstetrician, and a pediatrician, and finally the elevator starter sends you to a doctor out at Connors and Warren Avenues, who cured his brother-in-law of hemorrhoids. Out you go to Dr. Zilch, who handles real estate and insurance in his spare time, and he sends you back to the Professional Building, to have profile, full length and bust x-rays taken. Dr. Zilch speaks and writes such queer English that the roentgenologist understands that your pain is in the right clavicle and kodaks accordingly. By the next day, of course, your back is as good as new—doesn't hurt a bit—but you feel that you have to do the right thing by Dr. Zilch, so you go back to get the x-ray report. 'Deep calcification of the head of the humerus. Focus of infection probably in teeth.' 'Dear, dear,' says Dr. Zilch, 'if not remedied this may result in impotency.' Well, even at your age that scares you, so you sink 300 bucks in a quartz lamp outfit and use it conscientiously on your right clavicle and scapula for eight months and sure enough—your backache never comes back to ache.

"Well, then comes the matter of paying the bill. When you met old Dr. Elihu Ezekial Witherspoon in Spencer's Drug Store about three months after your recovery, you said, 'Doc, I owe you some money, don't I?' And he says, 'Do you? Oh, sure, I'd forgotten about it.' 'How much is it?' you ask. 'Oh, about two dollars and a half and thirty-five cents for the liniment. No hurry about it, though.' And just to show that you like the old Doc, in a month or two more you send Junior over to his house with \$2.85 and your wife sends along a plate of cocoanut drop cakes covered with a paper napkin, and in a few days his wife sends the plate back with some chocolate hermits on it. But the old order changeth—and how! The next morning after you get home from the David Whitney Building, the postman delivers one of those window envelopes and after opening it you read, 'Drs. Clarence Augustus Cottington, Ferdinand De Lyle Brackford, J. Millington Asbury, Everson Wastover Armbruster and associates, Suite 1401-70 David Whitney Bldg., Bureau of Auditing, Division of Accounts, Department of Credits, Invoice B7439. Your order No. 642. Terms: net, 30 days, no discount, F. O. B. Harper Hospital.' Then you notice at the top of the sheet after one of the names, the letters M.D. and you recall the letters on the cornerstone of the Union Trust Bldg., and realize that *M* means a thousand and *D* means 500, and an invoice means dollars and you drop dead—practically. Two days later you meet Dr. Armbruster going into the main dining room of the Club and he gives you such a funny look—although you probably had a funny look before he gave it to you—that you know he is wondering why you haven't paid his—or their—bill, so you blow your nose noisily and decide to have lunch alone in a dark corner of the grill. And when you get to thinking of the bill you don't want any lunch

and decide just to buy an apple from the nearest vendor."

MRS. LESLIE T. HENDERSON,
Publicity Chairman.

GENERAL NEWS AND ANNOUNCEMENTS

Dr. J. J. Rooks, fifty-six, died at his home in Grand Rapids, April 17, 1933.

Dr. A. M. Campbell, Grand Rapids, returned April 15 after a winter spent in Florida.

The Upper Peninsula Medical Society will hold its annual meeting in Escanaba August 10 and 11, 1933.

Urge your senators and representatives to support the bill amending the present medical practice act.

The Committee on Survey of State Health Agencies held a forty-eight hour session on April 29-30, 1933, in Pontiac.

Dr. G. H. Southwick was elected Chief of Staff of Butterworth Hospital and Dr. H. J. Pyle was elected to the same position at Blodgett Hospital.

Rev. Eugene Spoehr, father of Dr. Eugene Spoehr of Ferndale, Michigan, died at his home in Pennsylvania early in April.

The American Medical Association convenes in annual session in Milwaukee the week of June 12, 1933. Write for hotel reservations.

Michigan should have a large registration at the A. M. A. Milwaukee meeting June 12. Air and boat lines make Milwaukee easy of access.

Dr. A. Verner Moore, Grand Rapids, has been appointed general Chairman of the Social Committee on Arrangements for our annual meeting in September.

Dr. Walter Parker of Detroit is a delegate to the international congress of ophthalmology which meets in Madrid, Spain. Dr. Parker will be absent about six weeks.

A questionnaire on Birth Control was mailed to all members by the officers of the Section on Gynecology and Obstetrics. If you have not done so, return it in the stamped envelope that was enclosed.

Dr. J. M. Robb, President of the Michigan State Medical Society, addressed the Calhoun County Medical Society on April 4. His subject was, "Extrusive Earaches or Headaches." He also discussed the subject of Medical Economics and Medical Legislation.

The Detroit Roentgen Ray and Radium Society, which consists of members in southern Michigan as well as Detroit, were the guests of the Roentgenological Department of the University of Michigan Medical School on April 6. Dr. Hodges and staff provided a very interesting and instructive program.

The Wayne County Medical Bulletin publishes each year the number of papers written by members

of the Society and published in the various medical journals. During the year just closed, the total number published was sixty-one. Of this number, by far the largest to appear in any medical journal was thirteen in *THE JOURNAL* of the Michigan State Medical Society.

The sixtieth annual meeting of the Northern Tri State Medical Society was held at La Porte, Indiana, April 11, 1933. Dr. S. O. Larson of La Porte was elected President; Dr. Edward P. Gillette, Toledo, Vice-president; Dr. G. E. Jones, Lima, Ohio, Secretary; and H. E. Randall, Flint, Michigan, Treasurer. The next meeting will be held in Flint on the second Tuesday of April, 1934.

Dr. William Fowler of Detroit entertained the ophthalmological club at the Wayne County Medical Society club rooms on April 5. Mr. George Catlin, Detroit historian, read a very interesting paper on the Early Medical History of Detroit, dealing particularly with the medical history of the French regime. "Weelum" read several of his poems in the Scottish dialect which were appreciated by all.

The Michigan supreme court within the past month affirmed a decision by a Detroit circuit court judge that a needle left in any part of a person's body following an operation is *prima facie* evidence of malpractice. The patient, who had a needle left in his body following an operation for appendicitis in 1928, was awarded \$1,250 damages. This is said to be the first case in Michigan in which the expert testimony of physicians has not been deemed necessary.

The Alumni Association of the Detroit College of Medicine and Surgery are arranging plans for an all-day clinic on June 5, 1933, with a banquet in the evening. The clinic is free to all members of the medical profession of the State whether they are graduates of the Detroit College of Medicine or not. President Larsson of the Alumni Association is in correspondence with a couple of leaders of the medical profession. We hope to be able to give the program in full in the next number of this *JOURNAL*. A feature of the evening dinner will be vocal and instrumental music by musicians of note.

A bronze tablet will be placed in position in the Hillsdale Hospital, Hillsdale, Michigan, in honor of the late Dr. Walter Hulme Sawyer. The inscription of the tablet expresses the appreciation of the services of the late Dr. Sawyer to the University of Michigan, of which he was a member of the Board of Regents for so many years, to his community and to the medical profession of the State. Dr. Sawyer was a rare personality whose ability and judgment made every organization with which he was connected his debtor. The date of the installation of the bronze tablet is May 9, at 3 P. M. The presentation will be made by President Ruthven of the University of Michigan. Dr. J. Milton Robb, President of the Michigan State Medical Society, is to represent the medical profession at this event.

DR. CREE HONORED

Dr. Walter J. Cree of Detroit began the practice of medicine on March 3, 1883. Dr. Cree was a graduate of the old Michigan College of Medicine, which

amalgamated with the Detroit College of Medicine in 1886. The completion of his half a century of practice of medicine was marked by a very pleasing event when the Seniors of the Wayne County Medical Society assembled on April 17, 1933, at noon, to do him honor. Dr. A. P. Biddle presided. An address was given by Dr. Angus McLean, who said among other things that when Dr. Cree started the practice of medicine there was no Christian science, no osteopath and no chiropractor, and so on. He recounted the fact that Dr. Cree's active medical life extended over the most prolific period of medical history. Dr. John E. Clark, the oldest member of the society, was present and also complimented Dr. Cree on attaining his half century of practice still retaining his youthful appearance, as the doctor is only seventy-two years old and could still look forward to years of activity. Addresses were also made by Drs. A. N. Collins, J. A. Wessinger of Ann Arbor, and Cyril K. Valade of Detroit. Among the out-of-town guests were Drs. Herman Holden of Trenton, Dr. Hugo Erickson of Birmingham.

Dr. Cree was made an honorary member of the Wayne County Medical Society in 1926. He is one of the oldest members of the Detroit Academy of Medicine and has figured largely as secretary to the numerous medical organizations with which he has been connected since his graduation. He is at present a member of the Pan-American Medical Association and the Association of Military Surgeons. Dr. Cree has a habit of taking a vacation during the winter months in Cuba, Panama and Mexico. *THE JOURNAL* likewise extends congratulations on the completion of his half a century of practice.

DEATHS*

DR. G. DEVERE MILLER

The Tri-County Medical Society with sincere sorrow and regret record on February 16, 1933, the passing of the dean of surgeons in this community, Dr. G. Devere Miller of Cadillac.

Dr. Miller was the son of the grand old man of medicine, Dr. Carroll E. Miller, who came here as one of the earliest pioneers in the city of Cadillac and practiced medicine for forty-seven years, passing on seven years ago this January.

Dr. Miller was born in Neillsville, Wisconsin, on May 8, 1876, and came with his parents to Cadillac in 1879. He attended and graduated from the local high school, attended the Michigan State College and graduated from the Rush Medical College of Chicago in 1902.

He came directly to Cadillac and associated in practice with his father. He gradually assumed the greater part of the work, which after the establishment of the Mercy Hospital of Cadillac twenty-five years ago developed into an extensive surgical practice including every line of surgery, with such a high degree of success that his ability was recognized throughout the northern part of the state.

While Dr. Miller's greatest interest in life was his profession and he was ever ready to counsel and assist his colleagues, he also found time to take an interest and assist in civic affairs, especially in outdoor sports. He was proficient in hunting, fishing,

*The death notices which appear from month to month in the *JOURNAL* are not intended to supplant any eulogium or appreciation or resolutions county societies may wish inserted in this *JOURNAL*. Often we are unable up to the time of going to press to obtain more than some factual details in the life of the deceased. We are painfully aware that these notices fail to express in any way the influence exerted on the community, or the loss sustained by the friends and associates of the departed member.—Editor.

tennis and horsemanship, also an ardent advocate of conserving the natural resources of his community.

Dr. Miller was married in 1899 to Miss Lina Smelser and to them were born three children, a son who died in infancy, and two daughters. One daughter died three years ago. The second daughter is now the wife of Dr. Showalter, who will carry on the business of Dr. Miller.

Dr. Miller was Chief of Staff of Mercy Hospital, president several times of the Tri-County Medical Society, member of the State Medical Society, the American Medical Association and Fellow of American College of Surgeons. He was also a member of the Elks.

The passing of Dr. Miller from carcinoma, with his long period of suffering which he had to bear and his knowledge of the progress and outcome of the disease, gave to his friends and colleagues a lesson in fortitude and courage which would be hard to equal. For several months prior to his death, he had predicted the time of the end almost to a day. He met his friends with a smile and continued to practice his profession, even conducting an operation three days prior to his death.

DR. GEORGE SLOCUM

Dr. George Slocum, professor of ophthalmology at the medical school of the University of Michigan, died suddenly at his home March 24, 1933. The cause of death was angina pectoris. Dr. Slocum was born in central New York State sixty-eight years ago. He received his medical education at the University of Michigan, where he was graduated in 1891. After a few years in general practice he returned to the University, where he became a special student under the late Dr. Carroll, who was then professor of ophthalmology. Dr. Slocum was associated with Dr. Walter Parker for twenty-seven years and on Dr. Parker's resignation as professor of ophthalmology last summer Dr. Slocum became head of the department. Dr. Slocum was a student all his life, as a teacher he had few equals.

Dr. Slocum was a member of the American Association for the Advancement of Science, the American Medical Association, Michigan State Medical Society, Washtenaw County Medical Society, American Academy of Ophthalmology and Oto-Laryngology, the American Ophthalmological Society, the National Geographic Society, Rotary Club and other organizations. He is survived by his wife and four sons.

DR. ROBERT A SEABORN

Dr. Robert Seaborn, 916 East Grand Blvd., Detroit, died at his home on April 2, 1933. He had practiced in Detroit since 1892. Dr. Seaborn was a graduate of the Detroit College of Medicine and a member of the Wayne County Medical and Michigan State Medical Societies and American Medical Association. He is survived by his widow Jean, one son, Dr. Arthur J. Seaborn of Detroit, and one sister, Mrs. R. Bird of Brighton, Ontario.

DR. L. W. HAYNES

Dr. Lon West Haynes, forty-nine years old, of 919 Lawrence Ave., Detroit, physician and surgeon, died on April 19, 1933, in Harper Hospital, Detroit, after a three-weeks' illness. Born in Hillsboro, Ohio, he attended the University of Michigan, graduating in 1908. He came to Detroit in 1910. Dr. Haynes was a Fellow of the American College of

Surgeons, a member of the American Medical Association, the Michigan State Medical Society, the Wayne County Medical Society, and the Detroit Society of Gynecology. He is survived by his widow, Josephine D. Haynes; a son, Charles Hawley Haynes, and a daughter, Mrs. George J. Huebner, Jr., of Detroit; his mother, Mrs. Charles E. Haynes, of Hillsboro, Ohio, and a brother, Roy D. Haynes, of Washington, D. C.

DR. RAY CONNOR

Dr. Ray Connor, of Detroit, was found dead at the wheel of his automobile April 21, 1933. His death was attributed to a heart attack. Born in Detroit in 1877, he was educated at Williams College and received his doctor's degree at Johns Hopkins University in 1901. After spending two years as assistant and house surgeon at the Manhattan Eye and Ear Hospital in New York, he came to Detroit to practice. Dr. Connor was of a kindly disposition who made many friends and no enemies. He was a member of the staffs of Providence and the Children's Free Hospital. He was a fellow of the American College of Surgeons and the American Academy of Medicine and a member of the American Medical Association, the Michigan State Medical Society, the Wayne County Medical Society, the American Academy of Ophthalmology and Otolaryngology, the American Laryngology, Rhinology and Otology Society, the Detroit Otolaryngology Society, the Detroit Ophthalmology Club, the Detroit Academy of Medicine, the Detroit Athletic Club, the Detroit Boat Club, the Meadowbrook Club and the Country Club. Dr. Connor, who was unmarried, lived at the Wardell Apartment Hotel. He is survived by a brother, Dr. Guy Connor.

DR. CHARLES P. FELSHAW

Dr. Charles P. Felshaw of Holly, Michigan, died at his home on April 8, 1933. He was the oldest graduate of the Detroit College of Medicine, having attained the age of 92 years. After studying under a physician at Jackson and attending lectures at the University of Michigan, Dr. Felshaw began medical practice at Ortonville in 1867. He also owned a drug store in the village, and in common with all physicians at that time did dental work. He later entered the Detroit College of Medicine and Surgery and graduated in 1876. Difficulties with his legs caused him to retire about two years ago.

DR. CYRENU斯 G. DARLING

Dr. Cyrenus Darling, for many years at the head of the Department of Surgery of the Medical School of the University of Michigan, died at his home, Ann Arbor, on April 21. Dr. Darling was born in 1856. He was a graduate of the University of Michigan and was on the faculty from 1890 to 1919, during which time he made many contributions to the practice of surgery. In 1911 he founded the St. Joseph Mercy Hospital at Ann Arbor. Dr. Darling was president of the Michigan State Medical Society in 1926. His interests extended beyond his professional activities inasmuch as he was mayor of Ann Arbor in 1894. In 1931 a bronze bust of Dr. Darling, the work of Carleton W. Angell, was presented to the University by his colleagues. Dr. Darling is survived by two sons, Dr. Cyrenus G. Darling, Jr., of Pontiac, and Dr. Donald B. Darling, dentist, in California.